

CROSSIN,

RICHARD

1965

Duplicate copy

R. S. Crossin
1965

Journal

(1)

Waikiki, Honolulu, Oahu, Hawaiian Is.
1 July arrived 29 June at 11:50 p.m. Yesterday (30) visited the Shearwater, and did a bit of skinning of specimens from the June run. Crew looks pretty capable. Hunter is highly independent, but apparently well versed on operations for at sea.

Have seen very few birds here so far. Indian Myra - very abundant, very startling - like in actions and gait - are all-around good sturnid. House Sparrows are abundant, but not as noisy nor pugnacious as on the mainland. One ad. Brazilian Cardinal - a most striking species. Spotted Doves are fairly common, very reminiscent of our Mourning Doves. Barred Doves are everywhere abundant. This species must be congeneric with Scardafella or uicnerua, although I am unable to see the connection in terms of geography, separated as the native habitats are. Mexico - China. Several of the calls of Argusia exactly equal some of Scardafella. A few Japanese White-eyes were seen.

Manana Island, 1 mi offshore Honolulu, Oahu
1 July left Honolulu about mid afternoon accompanying M. Ely, Brian Harrington, Dale Hunter and Jeff Foreloff on banding run. Sooty tern adults were very

R. S. Crossin
1965

Journal

(2)

July
cont.

difficult to catch in day light so we banded young Sooties and Wedge Tailed shearwaters. Estimated over 200,000 sooties, ca 30,000 noddies and possibly that many wedgetails. Several dark phase wedge-tails were dug from their burrows. Several sets of 2 eggs for wedgetails. Most eggs appeared fresh and many birds seemed to be just mating. A very few Sooty terns with eggs, and chicks ranging through all ages. The noddies practically all had eggs, a few very young chicks. Most noddies slightly separated from the sooties and appeared most abundantly on the higher ridges and along the gullies. At night the pairs of ^{noddies} ~~sooties~~ stayed together, the ♀? incubating, other member sitting close proximity. Several sets of 2 eggs and one of 3 on noddies.

Banded 1000 birds of mixed species and eggs. Very cool with several showers throughout the night. We left the island about 6:35 a.m. I was charged and viciously attacked by a wedge tail that Doyle had just banded. Coconut palms (excellent) on island.

R. J. Crossin

Journal

(3)

1965

2 July

1st day out of Honolulu for Grid run
Left Honolulu 2:45 p.m. aboard
Shearwater. Spent the first day
observing birds, and getting the feel
of the ship. Total # birds seen = 225.

2nd day out on Grid run.

3 July

Spent the day at observations. Doyle
is very well versed on all phases
of the fieldwork and I am relying
wholly on him to do so. He has
excellent vision and the most
amazing ability to make counts of
birds at fantastic distances. Brian
Darrington also is very good at
observations. Jeff Todd was some
sore sick yesterday evening but
appears all right today. Seems
a bit listless and disinterested
in the work. Spent some time
after observations in preparing
blood vials, stringing dip nets,
making eye markers etc. We
have done no collecting as yet,
but are prepared for it when we
reach the Grid. It is now a
little easier to spot and identify
some of the birds. Sooty terns
and Wedge-tails are the most
abundant. The captain came up
and discussed some of the points

R. J. Crossin

Journal

(4)

1965

4 July

3rd day out on Grid Run

Awoke very tired at 5:05 a.m. after
figuring bird lists until 12 last
night. Very few birds today. A few
showers showing off to the SE.
Spotting is becoming somewhat
easier and I feel I will be
able to identify most of these species
within a few more days. Separating
P. hypoleuca nigripennis from P. h. hypo-
leuca is readily done when the birds
come in reasonably close.

The food aboard the Shearwater
is excellent, and the entire crew
are very friendly, some fairly
well versed on bird species.

By 1:00 p.m. several large feeding
flocks have passed the ship. One is
often attracted to such a flock by
seeing a large frigate or two - beneath
them but lower, to the sea normally
an abundance of sooty terns are
squirting, and yet beneath these
will invariably be a number
of Wedgetails and sometimes a
P. hypoleuca or two.

Tropicbirds are most often seen
singly, but occasionally a pair.
These seem to be the most sur-
vivors of all and generally give
one or two passes (sometimes)

R. S. Crossin

1965

Journal

4 July
Cont.

3rd day out to sea grid
over the ship before heading on. The
sun is very hot today, some
scattered clouds, but this seems
only to intensify the sun's rays.
Rayle has been working constantly
when not on watch at getting
various odd jobs done for the big
island push on Lascarsby. We
should hit the grid tomorrow
afternoon and Lascarsby
on the 15th. Yesterday lost
some time with rudder trouble,
but this has been fixed and
ship is running smoothly.

We are now starting to run into
large flocks of Sooty terns, usually
with some mixture of other species.
Typical procedure is to spot a frigate
bird or two which often accompany
the flocks. When one can see the masses
of mottling Sooties beneath the
frigates, but usually well sky-lined
although often many are beneath
the horizon. Usually some wedge-
tails are with these flocks, but
always low to the water and very
difficult to see. Occasionally
a few *P. hypoleucos* (either Brown
or Cook's) accompany the flocks.
These flocks usually do not come

R. S. Crossin

1965

Journal

4 July
Cont.

3rd day at sea on grid run
near the ship, but split and
drift to either side far out or
the entire group may veer
off to one side or the other. Dark
phase Wedge tails have become
more numerous.

4th day at sea on grid run
5 July. 2:00 p.m. birds not as numerous
today as they were yesterday, a
few large, ^{mottled} flocks of sooties. Rayle
worked on the outboard engines
today. The new one is shot and
cannot be repaired, so we will
have to depend on the old engine
for everything. I am so thankful
Rayle is on this run, as his experience
in mechanical matters is priceless.
We will not hit Johnston until some
time this evening so still no
collecting as yet. We intend to
start tomorrow morning. Brian
and I fixed up two scoop nets for
bird pickups today and things
are quite ready for the grid run.
Rayle passed a little advice out last
night on gun safety. I am
very anxious to see if I will
be able to hit these sea-birds
from a bouncing, swaying deck.
They look as if they should be quite easy

R. S. Crossin
1965

Journal

6 July

5 Day at Sea (Grid Area)

We entered grid at 0741. Birds seem to be particularly scarce here. There was much distant cloud cover over most of the morning, but toward afternoon it became quite cloudy over the entire area. There appeared to be a great abundance of ^{the} birds seen on the water, and very few in flight. Perhaps vision for surface feeding or there birds is greatly hampered by cloud cover. Even ^{RT} tropicbirds were seen to take off from the water.

4 birds were collected. I shot one dark-phase Wedge tail shearwater and finished a P. h. nigripennis off that insisted on flying off after Bryan had lambasted it with 3 or 4 shots. I loused up very badly on the first shooting this morning on a flock of sooties mixed with mullies and hypobryces. I believe a slight case of bird fever from not shooting in so long. Things are progressing along quite well. I now have the feel of the operation down pretty well. Observations are becoming much easier and paper work is becoming some easier after each days work.

R. S. Crossin
1965

Journal

6th Day at Sea

7 July

Running NE up second leg of grid today. Sea quite rough (about 15 knot wind). Several light rain showers plus misty weather, wind and deep troughs make visibility of birds very bad. Aside from this, however, there definitely is far less birds here in comparison to the run to the grid from Honolulu. Juan Fernandez Petrels with molting upper wing coverts give the appearance of Sermadec Petrels or possibly even mottled petrels. White wrist marks are prominent in some cases. The underwing pattern showing all white except the outer primary tips which are black usually designate it with fair certainty to Juan Fernandez. Cervicalis shows a very white neck against a dark back. This appears to be plain enough at close range to distinguish them from Juan Fernandez. We kept watch on the flying deck as the sea is covered intermittently with heavy spray. No birds collected as yet today 5:55 p.m. and no shots fired.

R. S. Gossin

Journal

1965

7th day at sea (Grid area)

8 July

3:30 p.m. So far have collected 3 Red-tailed Tropicbird and 1 sooty tern. One flock of ca. 40 birds was encountered. As we approached it, fish could be seen jumping from the water. Shortly afterwards a large school of fish (ave. 2 1/2 ft long) could be seen swimming just beneath the surface. The weather today has been clear with little wind - hot. Birds again today are few and far between.

8th day at sea (Grid area)

9 July

8:20 p.m. Have been running in a NE direction up one leg of the grid all day. This NE direction is very bad for birds; a 10 or more knot wind is hitting the ship almost directly and allows for bad visibility, plus all observations must be done from the flying bridge because of heavy wash over the foredeck. This of course almost eliminates collecting. Only one bird collected today - a Red-tailed Tropicbird which I bagged toward evening. Birds appear to be mighty few in this grid. I believe the bad visibility connected with the wind is actually cutting our sighting records down considerably. Ship is running at a

R. S. Gossin

Journal

1965

5th day at sea (Grid area)

9 July cont.

rough sea is not especially bad, but the actual stuffing of specimens is most aggravating with winds continually ruffling feathers and every object sliding about the room including the persons working. If these skins come out bad, and I presume they will, I would suggest total skinning while en cruise, with complete fat removal etc and freezing the skins to be made up in port. If this is at all feasible, the quality of the skins could be improved many times.

9th day at sea (Grid area)

10 July

Traveled SW most of the day and so had good observations plus good collecting. Since the wind is predominantly from the NE these SW runs are drastically different from the NE ones. Going into the wind makes observations very difficult in that there is enough wind movement to cause binoc irritation, thus seriously impairing distant spotting. On NE runs the bow is generally under heavy spray and thus collecting is practically nil from the flying bridge. Several nice

R. S. Crossin
1965

Journal

9 Day at sea (Grid Area)

10 July cont. Total of 14 birds collected, 9 of which I either collected or participated in. The shooting is getting much easier for me now that I am able to judge for the rocking and dipping of the ship plus am now getting a better idea of how to judge distance on the water.

10 Day at sea (Grid Area)

11 July Running NE most of the day, so observations were good ~~and~~ for only a short time in the morning. Tried a little collecting from the bow under heavy spray - 6 birds collected. White neck petrels are apparently most abundant in the southern part of the grid whereas *P. hypoleuca* seems to be the common petrel in the N part of the grid.

Skimming is progressing slowly with collecting so we should be ready for the islands with not too much back-work.

11th day at sea (non-Grid)

11 July Observations carried on from the bow. Skiffs got a little mist occasionally throughout the day, but not too bad. We have run a cycle here in

R. S. Crossin
1965

Journal

11th day at sea (non-Grid)

12 July cont. that the common petrel this far north is again *Phytophaga* either Bonin or Cook races. The *P. externa* are again rare although they were quite abundant in the South. One strange fact is apparent in comparing the bird count of this year with July 1964. In the latter year no *P. externa* were seen, whereas this year 188 in the grid alone were observed.

12th day at sea (non-grid)


13 July Running due N today - expect to arrive at Laysan tomorrow about noon. By cutting off some of the last leg of the grid during the night when no observations would be made anyhow, we are able to save several hours.

A number of fair sized flocks have been seen so far today (1220). They have the composition noted for flocks when we first left Oahu, i.e., a large frigate high up, below it the sooty terns, some of them extending as low as the water and a lesser number of wedge-tails skimming the waves beneath the sooties.

R. S. Crossin
1965

Journal

14 July

Laysan Is., Hawaiian IS., Pacific Ocean:
 arrived 1120 - landing quite smooth, but had hard squalls all the way in. Island pretty well covered with brush up to 10 ft high - peculiar 5 petal flower with all 5 petals lying on one side -  - Several ironwood trees in clumps about the island - this tree is very similar in leaf to tamarix. 2 coconut palms toward center of island. Within the ironwood trees along the SW shore there were about 10 pair of Fairy terns with varying sized downy white chicks - few dark marks on head. Also in the ironwoods were about 20 pair of Hawaiian Noddy terns with nearly grown young - final nest of twigs and grasses. The island is honeycombed with wedge tailed shearwater burrows - all appear to have incubated eggs.

Laysan Albatross - all nearly grown young.

Black footed albatross - same.

Large frigate bird colony varying sized young up to near adults.

Some Red footed Boobys still in nests, most Blue faced Booby young large & running.

R. S. Crossin
1965

Journal

14 July
(cont.)

Laysan Is.
 Red tailed tropicbird on incubated eggs and with varying sized young. The nest is a scooped out depression in the sand under the dense shrubs. Many Noddy terns on eggs, but chicks up to adults are everywhere. The noddys use both the ground and abandoned booby nests in the low shrubs.

Bristle-thighed Curlews - about 30 adult birds

Ruddy Turnstone - 200-300 adults.

Black Turnstone - 1

collected ticks in the afternoon.

Laysan Is.

15 July

Banded all night in the sooty tern colony. work was interrupted both by a full moon, when it was clear and hard showers every so often. Started raining very steadily in the morning and hosed up the banding of Boobies and young albatross. The albatrosses are nearly ready to fly and practice at fanning their wings a good deal. as the morning went on showers became more frequent and heavy and the wind picked up considerably. By 11:30 the

R.S. Crossin
1965

Journal

15 July
cont

Fasciatus
rain was falling steadily with heavier gusts at intervals. Throughout the afternoon and night very strong driving winds and rain soaked every object in the tent and at times threatened to lift it from its stakes. Work was impossible during this period. Cleared up early in the am on 16.

16 July

weather now cleared up pretty good. Banded most of the day. Doyle & I concentrated on Sooty tern chicks + a few young albatross. The Sooty chicks were practically all of a size from fully feathered to flying stage and many already flying. Banding very difficult in the daytime so we teamed up and by using the band net for a sack we could run them around and pick up 20 or so, band them ~~and~~ etc. Started the blood work at dark and continued this until after 4 am when we started breaking camp. The bleeding started out very badly for one day my killing a nice big albatross chick. After this I used the large subclavian

R.S. Crossin
1965

Journal

16 July
cont

Fasciatus
vein under the wing on albatross. This is quite pronounced and easy to see after a few of the under wing coverts are plucked away. Naturally there is no danger of killing the bird in this manner. Attempts to bleed other large birds in this manner, such as frigate, boobies etc. did not succeed because the skin on these birds is very dark or black and the vein does not show up as in the albatross. Ca. 112 blood samples collected but about 8 in the centrifuge machine. The centrifuge tubes we are using are very bad and crack at the small bottom with the greatest of ease. Finished up the blood spinning on ship at 1000 a.m. got off the island about 500 a.m. After blood work completed until about 5 p.m. now getting ready to hit Japan, should arrive about 8:00 p.m.

17 July

Japan

Landing shortly before 8:00 p.m. Del + Brian went in with the skiff first to test the entrance and set up a light line to guide the skiff when it returned with myself, rickoff and the gear. Retreating coral reefs surround the island of

R. S. Crossin

Journal

1965

17 July cont.

Laysan

Laysan and entry can be made even with a small boat only in certain small channels. Good sandy beach for landing which occurred without incident. We set up the tent with Doyle & I joining so as not to repeat the stoppage job of tent setting which occurred on Laysan. We then set out to land Sooty terns all night. I am still very stiff and sore from the wet conditions which occurred on Laysan. The colony of terns first appeared wild and could not be easily worked, but we worked into better sections later in the night. I spotted a Laysan teal way up on high ground and grabbed it in the light of headlamps. Finished up banding at day light - banded 1000 adults, many are old similar.

18 July

Laysan

Tried to grab some sleep after banding all night, but the flies are terrible and soon swarmed the camp area. Saw the Laysan Finch for the first time. Sort of depressing - reminds me very much of an English Sparrow with some yellow scattered over

R. S. Crossin

Journal

1965

18 July cont.

Laysan

the frontal area. Upon entering into the banding area (the night before) came upon (a pair of Bulwer's Petrel at their nesting burrow with a small newly hatched chick. The tern colony appeared to have very few young birds as compared to Laysan and in certain areas not a chick could be found. A few scattered birds were still on eggs.

We gave up the possibility of getting any sleep after about an hour or so and splitting up into two parties we went out for ticks. Doyle and I examined hundreds of possible hosts before finally finding one on a young Sooty tern. All species present were searched, but we encountered only one other tick (Ixodes) on a young noddy tern. Brian and Jeff had little better luck and found only a few. Both specimens that Doyle and I found were on the under wing surface in the radius-ulna area. Brian stated he had found some on the upper wing in this general area. Doyle and I found a small number of the soft ticks (Cimex - lewis). This species remains on the host during the daylight

R. S. Crossin

Journal

1965

18 July
cont.

Laysan

and remains attached - unlike
Brisson stated about them leaving
the host during daylight hours.

We banded some Sooty terns
and Albatross throughout the day
and began banding Sooties in
earnest again at dark. Everyone now
very tired from the grind over the past
week with little sleep and a bit of
work now and then. Finished up
banding about 4:00 a.m. and tried to
get a few hours sleep before the flies
caught us at daylight.

19 July

Spent the day banding Sooties and
Sooty terns. Sooty adults can be taken
^{in daylight hrs.} by using a small hand net with
one person banding - the other swing-
ing the net and alternating. Dayle
and I have some sneaking suspicions
that the boys are doing a bit of band
catching because of the rapidity
which they finish at times - although
neither as necessarily very fast.

20 July

At dark we again banded Sooty adults
and Laysan Albatross birds.
Spent the day banding Laysan and
Black foot Albatross. Wound up all banding
by night (ca. 9:00 p.m.) save for a
few Albatross birds. Started blood
work about 10:00 p.m. Blood work
went slow and we did not finish

R. S. Crossin

Journal

1965

20 July
cont.

Laysan

until after daylight on 21. Much
of the problem here was that everyone
was dead beat after the previous
week and few odd days of island work.
Despite the prospect of taking forward
to boarding Shearwater in the morning,
it became very difficult to keep
awake.

21 July

after winding up the banding,
Jeff and Bryan went out and finished
up less than 100 Albatross bands that
remained and we broke up camp.
We left from the Shearwater camp
in and we loaded - leaving the
island at 10:00 a.m.

after unloading things upon
reaching the ship, Dayle and I
started blood work (centrifuging).
By this time it became very
very difficult to stay awake.
Came up with 108 samples. finished
blood work about 2:00 p.m. Same time
Arrived back at Honolulu about 2:00 p.m.

24 July

Out from Honolulu, Hawaiian Is.

2 Aug.

Pushed off in Shearwater from
Honolulu at 0910. Mr. Weston is
now acting as Captain. Uncertain
whether or not Capt. Knutt will
be returning. Bricson Anderson

R. S. Crossin

Journal

1965

2 Aug.

Out from Honolulu, Hawaiian Is-
 and Larry Huber aboard and will
 be dropped off at French Frigate
 Shoals. Crew will then consist of
 myself, Ray, Ken Amerman, Brian
 Harrington and Jeff Toddoff. Wedgetails
 quite common out of port, also
 a few Common Noddy, Sooty tern and
 scattered Bulwer's and Newell's. I
 had one school of porpoise (ca. 35). They
 allowed the ship to run right amidst
 them. Occasionally 5 or 6 would be
 lined up abreast with all dorsal fins
 cleaving the water and then disap-
 pearing in unison. The group played
 about the ship at approx. distance
 of 30-50 yds for a few minutes
 and then all were gone. A few
 intermediate, ^{dark} wedgetails were seen
 earlier in the morning - also a few
 darks from the main islands. These
 appear much lighter brown than those
 seen farther south. The wedgetails
 have been the most numerous so far,
 with mighty few terns. With a
 crew of 5 for the island work,
 I have hopes of this being a
 somewhat better trip than last.
 Everyone seems in good shape - Jeff
 feeling a slight hangover from
 yesterday's drinking bout.

R. S. Crossin

Journal

1965

2 Aug.

Honolulu to Kauai run 1st day out
 Passing Kauai many Newell's and
 Dark-rumped Petrels (see species account
 for Dark-rumped Petrel 2 Aug).

2nd day at sea

3 August

After sighting Nihoa, birds became
 exceedingly numerous - Bulwer's Petrels
 especially were spread continuously
 over the area for many miles.
 Only a few Newell's were seen here
 and a very few Dark-rumped Petrels.
 One Red-tailed Tropicbird hit the
 ship during the night and was found
 dead this morning by the crew.

Throughout the afternoon birds were
 less abundant with mainly singles
 or doubles of wedgetails and Bulwer's
 Petrel. During late afternoon
 singles became scarce and all
 birds seemed to be concentrated
 in a few large flocks. Well over
 a thousand were observed during
 a period of about 20 minutes. Three
 or four flocks made up this total.

4 August

Dropped anchor about 0700 at French
 Frigate Shoals to let Kenison and Larry
 Huber off. They were loaded and off
 by 0750. Most of the gear went
 into the rubber raft. A coast

R. D. Crossin

Journal

1965

4 Aug. cont.

Mid run - August
 Swath boat with 3 men came into the ship and a good portion of the light material was stored aboard it. The coast guard boat also towed in the 3 rubber tanks of gas. We started toward Laysan a few minutes after Benion left. Due to arrive about 11:00 tomorrow. Birds were not too abundant about the islands as we left. Also appeared to be more abundant off the north side with many of those leaving the islands heading north. All 3 species of *Puffins* were present Fairy, Noddy, Hawaiian Noddy and a few Sooty terns cruised the reef water. Frigate were present in some numbers. Petrels thinned out from yesterday as did wedgetails. We are now in the process of packing equipment etc for Laysan and finishing up the birds which were brought from Honolulu from other trips. Only a few Storm Petrels have been seen so far up the lee wards. None really came in close enough for collection. 67,000 bands are available for Laysan. We may not get all 40,000 Sooty bands or since many of the birds will probably have already gone.

R. D. Crossin

Journal

1965

5 Aug.

French Frigate Shoals to Laysan

Due to arrive in Laysan at 1500. Much bird activity this morning. Wedgetails and Sooties mainly - going in all directions. We passed Nihoa Reef about 0900. The water all through this area is very shallow - as low as 80 feet according to Mr. Ashton. Small insect like critters were flying from the top of the water through this area. They appeared about the size of mosquitoes and would dart or meander for a few inches to a few feet over the surface of the water - pale brownish in color. One school of porpoise, ^{ca. 40+} stayed in front of the ship for some 10 minutes. At times high-pitched sounds were emitted by those that surfaced. A few whales also seen. Detected by a misty column of spray shot up from the surface of the water.

One small ? storm Petrel seen. I sawed white on the crissum or wing as it flew directly away - light beneath, gray on top - very possibly detest on wings - *Oceanodroma furcata*? about size of Leach's.

A. D. Crossin
1965

Journal

Laysan

5 August arrived on the Island ca. 1530. Set up camp and prepared for banding during the night. Dayle and I had to run back to the ship to get the radio fixed which went out as soon as we started making first contact. Banded all night long. moon was up very bright until ca. 1:30 a.m. screwed up the sottie banding, and I suspect will be bad a little longer each night. I banded 1800 Sotties + 100 wedgetails.

6 Aug. Got a couple hours sleep from dawn on. Woke up very stiff + sore. Intend to work on banding a few Albatross + Frigate + look for ticks. Aule + I will do smoke seal count from the raft. Many wedgetails had small chicks; many other eggs pipped. Sotties had large - fully feathered young this time, few small chicks. A few Christmas Island Shearwaters with large dark sooty fuzzy downy young. Wedgetail babies are silver stored.

Dayle and I took the rubber raft and went up to west shore making periodic beachings to get a complete Seal count and try to determine sex on the cutters. This became practically impossible because when one of a group was aroused, by turning

A. D. Crossin
1965

Journal

Laysan

6 August cont.

it over, the others would immediately take for the water. Very few small pups were seen. ~~most~~ ^{many} of the adults and most of the immatures were in the process of molt. Shaggy portions of the old coat still remained on the dorsal surface in tatters. One dead adult was seen on the north shore. No seals were found on the East shore where large breakers come pounding over the rocks along much of this side.

Seal Count

Adults		Subadults		Pups	
		Yearlings			
100	95	15			
♂	♀	♂	♀	♂	♀
6	8	3	3		1

individuals determined as to sex

Fly Problems

House flies are so bad that working conditions are drastically hindered. Writing is near impossible because the annoying little mother crawl into your nose, ear, eyes etc and just cover you. One must eat in great haste also or little will be left. They appear to be equally bad all over the island, but congregate in great numbers around camp.

R. S. Crossin
1965

Journal

Japan

6 Aug. Banded Sooty Terns all night. Moon stayed up until 0220 am. Banding very poor until moon set. 31 small chicks were collected and sent to ship for Peruvian nasal mite study.

7 Aug. Checked for ticks part of the day, net-banded some sooties and also banded 100 tropicbirds. Started banding sooty terns at dark, but the bright moon lowered operations until about 3 am. Must try to set up island schedule work for moonless nights. It takes twice as long or better to band as many terns w/o moon as with, plus much more work and energy expended in trying to catch the wary little critters when there is moon light. Wound up banding again at daylight. - dead heat.

8 Aug. Woke up about 8:30 still dead heat. Everyone is quite tired and stiff and for sore. Off to check on Ixodes down by the lake plus check on the Japan test.

No Ixodes found - no teal seen. Collected 50 flying young sooty terns and the few chicks needed for Peruvian nasal mite studies. Slept a few hours in the evening and banded Sooty terns til dawn. Moon still forcing up the banding.

R. S. Crossin
1965

Journal

Japan

8 Aug. ^{cont.} Just at dusk the main body of Sooty terns to the SW of the island started calling loudly and rising into the air. The wave swept along; more and more birds becoming involved - the sound increasing as greater numbers joined in. The wave eventually swept the Common Noddies and Hawaiian Noddies all about the camp. These too joining in the rise into the air and loud calling. After about 5 minutes most of the birds began settling back into their ^{they had maintained} ground or bush positions before the clamor started.

9 Aug. Doyle + I walked around the entire lake in search of ticks and population census. Very few ticks and all Ornithodoros. These found mainly on young Sooty tern. The fly problem is very bad now. Clouds cover our head no matter where you walk. In the afternoon all the crew went down around the lake again to band young Red-footed Boobies and count Japan teal at dusk. Got very few Boobies and these in the most inaccessible places in dense Scaevola and other high shrubbery. At least 4 teal were seen. Banded terns all night.

1965

Journal

9 Aug

Laysan
 after a few hour sleep Banding is extremely difficult. The moon is almost full now and last night finally set at about 4:30 - about 15 minutes before light of dawn came on and finished it. The terns are extremely wary and with the moon, most of the catches are in the air as they fly up. Banded sooty terns by catching them with the hand nets throughout the afternoon.

An interesting phenomenon occurs at dusk with the terns (see 8 Aug.) this occurred again tonight at approximately sundown - practically all terns on the island rose up calling loudly. They settled down within ten minutes.

10 Aug. Banded sooty terns during the day with net catching. Banded wedgetails all night.

11 Aug Banded Sooty tern adults by net catching. Banded sooty clusters all night.

12 Aug Collected Beaker samples during the day. Collected blood during late afternoon and evening finished up blood and broke camp. Boarded Shearwater about 9:00 p.m. (2100) Up till after midnight doing blood samples. The door on the outside lab does not

1965

12 Aug cont

54 recoveries on Laysan Albatross

Laysan
 close melt because the material (aluminum) is completely corroded. Flies got into the lab while we were on the island and laid eggs in the skins which were brought from Honolulu. The skins were placed in a half drum with formaldehyde in a can. Hopefully they have not caused too much damage to the skins.

After the blood work Duke and I are completely exhausted. This island work will kill a man if he stays at it.

Long enough Diurnal Positions: $24^{\circ}38'N; 171^{\circ}28'W$ — $22^{\circ}35'N; 171^{\circ}03'W$

13 Aug.

Started observations in the morning. The sea has been fairly rough since we left Laysan. Birds are scarce today - most individuals apparently concentrated into a few large flocks. Still feel totally washed out. Right eye is very sore yet and bloodshot where sooty tern made a lightning stab when I got care less for a moment while taking blood on Laysan.

$20^{\circ}52'N; 170^{\circ}45'W$ — $18^{\circ}51'N; 170^{\circ}08'W$

14 Aug

Relatively few birds seen for the day (605). The majority of birds concentrated in a few large flocks. The sea was quite rough causing extensive roll to the ship and thereby decreasing the efficiency of observing.

1965

Journal

20°52'N; 170°45'W — 15°51'N; 170°08'W

14 Aug. cont.

Cook's Petrels were scattered throughout the day. Wedgetails and Sooty terns again made up almost the entire total. 2 Kermadec Petrels and 2 believed to be slender-billed shearwaters were observed by Harrington & Amerman. One white-necked Petrel was seen by Amerman & I at close range. It probably flew from the water as I suddenly noticed it off the starboard bow heading away from the ship.

17°10'N; 169°48'W — 15°19'N; 169°07'W

15 Aug.

Spotted tower at Johnston Island at 0727. Birds quite numerous about the island for the next hour, but the number quickly trailed off and very few were seen for the rest of the day. 12 orange streamered birds were seen within sight of Johnston and 5 later during the day. These included 10 sooty tern (imm) and 1 wedgetail near Johnston plus 1 Red-tailed tropic bird.

Later during the day 3 more wedge-tails and 2 sooty terns were seen with streamers. Dark phase wedgetails started to pick up today (5 seen). A few individual unidentified Shearwater, petrels and one flock of 30 might possibly have been slender-billed shearwaters. The flock of 30 was seen at 16:22. I

1965

17°10'N; 169°48'W — 15°19'N; 169°07'W

15 Aug. cont.

first noticed them out at some distance winging along E low to the water, very little circling or banking. At that first sighting I thought them to be noddy terns. ^{Kermadec} We discerned them for some time at a distance and could not decide what they were. They then disappeared and Ken finally spotted them on the 420. We notified the bridge to swing the ship around to go over to them. I had the 12 gu. in hand to collect some but the entire flock raised up and flew away from the ship before we arrived in range. We chased them for some 10 minutes, but they were just walking away from the ship - landing on the 420 briefly and starting up again. Completely charcoal black, smaller than wedgetails with no hint of the brown that light or dark phase wedgetails give. Wings not rounded like Christmas Island Shearwaters - tending more pointed and bent as wedgetails. We asked the bridge if the ship could be put over, but Mr. Ashton felt it was too rough.

we are expected to be in the grid by morning.

N. S. Gossin
1965

Journal

NE area Grid $30^{\circ}58'N; 169^{\circ}17'W - 12^{\circ}40'N; 170^{\circ}42'W$

16 Aug. Entered grid before sunrise. The typical birdless NE corner was most vacant today. A total of 33 birds of 30 sightings. Shearwater-Petrels made up 28 of the 33. NO SOOTY Terns during the entire day. Cloudy all practically all the afternoon with a few squalls during the day. NO birds collected.

Grid area $13^{\circ}00'N; 171^{\circ}35'W - 14^{\circ}17'N; 170^{\circ}13'W$

17 Aug. Running NE up leg of grid all day. The wind + moving against it makes for bad visibility with the horizon. Sea was comparatively rough. A total of 85 birds seen today. None collected. Although there were two small flocks, we were unable to catch either one with the ship. Petrels are mainly encountered as singles and scattered throughout the day, observations. Terns were observed today - all contained in two small flocks - one with 2 Fairy terns. Birds seem extremely wary of the ship - and I wonder if continued collecting in this area has not ~~finally~~ finally smartened them up. Both flocks that were shared broke up and split in all directions. No tropical birds today.

R. S. Gossin
1965

Journal

Grid Area $15^{\circ}32'N; 170^{\circ}13'W - 14^{\circ}10'N; 171^{\circ}38'W$

18 Aug. A slight increase in birds today, but certainly nothing compared to last month. Total of 143 seen today. (1 WTTB and ^{one wedgetail and} one Juan Fernandez Petrel collected. *Pterodroma externa* including white-necked, Juan Fernandez and those of *P. externa* un-identified to race made up 26 birds - just one under the number of wedgetails. Sooty terns amounted to 54 birds. Two Fairy terns showed up with flocks of Sooty terns and shear-pet.

Running SW most of the day. Good visibility, but no birds. The few flocks of sooty terns sighted practically vanished when the ship came near. No doubt at least a couple of birds in each flock have been shot at or terribly frightened by shooting some time in the past. Their wariness and flight when the ship comes near probably causes a chain-reaction of fear in the other birds of the flock. Petrels are just naturally wary under most conditions. Certainly Sooty terns do not act like this when out of the grid area where little collecting is being done. It will be interesting to note the behavior of birds when we start the new grid next month.

A. D. Crossin
1965

Journal

August
19 ~~July~~

Grid Area $13^{\circ}34'N, 173^{\circ}05'W - 14^{\circ}50'N, 172^{\circ}05'W$
Ran NW across the bottom of one leg of the grid for a short time in the early morning. Turned NE about 2:55. Quite a strong wind blowing and naturally we are running against it to the NE. Visibility is not too good and as per report so far this trip birds are few and far between. The one flock of sooties and Pterodroma washed up when we started chase. The sooties as usual just vanished. The Pterodroma, mainly white necks - stayed far enough ahead so that we did no more than ruffle a few up with shot. So far (2:30 p.m.) have collected 5 birds.

3 more birds collected before sunset. One large flock of over 100 birds seen just at sunset. Heavy squall all about so chasing was useless as they were a good distance off. Petrels were the most numerous of any group (discovering flocks) and were scattered throughout the days observations. One Pomarine Jaeger seen in the afternoon.

One ad. Sooty tern was knocked down way off by Jeff and I. It took approximately 12 minutes before the ship came up to him. It then took off from the H₂O and flew about 30 yds. before Jeff knocked it down with a blast.

A. D. Crossin
1965

Journal

20 August

Grid Area $16^{\circ}02'N, 170^{\circ}56'W - 16^{\circ}21'N, 171^{\circ}40'W$
Finished up the NE portion of 3rd leg and turned SW about 0800 a.m. A few newell's shearwaters were about very early in the morning (1 call.) and a pair just at sunset. None seen in between. The weather all day has been fairly uniform with scattered cloudiness and a few squalls off in the distance. Wind moderate and visibility good - only problem is very few birds (310) total. The few decent flocks seen usually split up long before the ship gets to them and the sooty terns just vanish. These terns certainly appear to be wired up about getting near the ship. A total of 10 birds collected today - 3 petrels, 2 TF and one sooty. The few flocks make up practically all birds seen today.

Early this morning I shot down a juv. Ferrasandwich Petrel at long range and just broke the wing. It started calling and thrashing around quite a bit. Almost immediately (long before the ship got to it), a newell's shearwater and a wedgetail came in and sat by the downed TF. It was this newell's that I shot. A wedgetail came in later in the afternoon to another downed wedgetail. Perhaps Ken's ideas of using decoys might work.

1965

21 August

Grid Area $15^{\circ}05'N; 173^{\circ}06'W$ — $15^{\circ}25'N; 172^{\circ}11'W$
 Running SW on next to last leg of grid from sunrise. at about 0925 message received on radio that one of the oiler's father had died and he was, under the circumstances, badly needed at home since he was the eldest child. Captain Aulton asked permission of me to go directly to Johnston Island where the man could catch a plane out and I readily agreed. The Captain had just a minute before changed course directly for Johnston. A message requesting permission to go to Johnston was sent. We moved toward Johnston on the assumption that permission would be granted. Change of course to Johnston was executed at 0925.

A total of 14 birds had been seen up to this point from sunrise. Two were collected (a light phase wedgetail and a Muddy turnstone).

Observations were kept from 0925 until sunset (1846) and attempts to collect were made — none was collected. Only one flock was seen during the day at 1217 in which ~~15~~ 16 Sooty terns were recorded. Practically all other observations were single birds — mainly *Pterodroma* sp. Linn squalls were frequent throughout the whole afternoon. 50 birds were recorded. Only unusual birds were 1 fairy tern and 1 Bermuda Petrel.

1965

22 August

$16^{\circ}22'N; 170^{\circ}25'W$ — $17^{\circ}03'N; 169^{\circ}05'W$,
 within 50 mi radius of Johnston practically all day
 an abundance of birds throughout the day. Johnston Island was sighted at 1235 and we were running abreast of it at about 1400 — 1420. Oiler departed before 1400 on a tug which came out from the island. Shearwater-petrels were mainly seen up until Johnston, then Sooty terns started picking up and increased in number going north as several large flocks were seen. Orange streamers were numerous abreast of Johnston (ca. 2 mi out). One flock of 10 sooty terns ^{from island} went by heading into the island; 4 of which were streamers. 8 more were rapidly seen and 19 were spotted in a large feeding flock when the Loran tower was just visible in the horizon. A few more were seen on Sooty terns throughout the rest of the day. Also streamers were a Brown Booby immature and one wedgetail. The large feeding flocks brought the number of ^{terns} Sooty up to 550. Day's total of scattered shearwaters and those in flocks came to 270. 9 birds were collected during the day (4 *P. externa*, 4 wedgetail and 1 RTTB. Total birds for the day was 843 observed.

R.S. Crossin
1965

Journal

23 August

NE Johnston Is. 18° 11' N; 167° 44' W — 19° 23' N — 165° 53' W

Ran NE of Johnston until we came to the long banks (ca 500 fathoms) and then ran almost due east all day long there. We had hoped to pick up land along here, but the area is practically empty of birds. Only 2 sooty terns were sighted, early in the morning. The days total came to 39 birds - 35 of them Shearwater petrel; 10 *P. externa*, 12 wedgetail and 13 others scattered among Christmas Island shearwater, Bulwer's Petrel (3), Cooks (5), *P. hypoleuca* (2), Kermadec Petrel (1) and 1 shear-pet. One Black-bumped Petrel was seen about 2 minutes after sunset. No flocks were observed all day and no specimens were collected. Practically all sightings were of single birds (35 sightings/39 birds).

20° 42' N; 164° 31' W — 21° 32' N; 163° 17' W

24 August

Fairly quiet day except for one large flock in the early morning. This contained well over 100 birds ~~and~~ of which 70⁺ were *Pterodroma externa*. 4 of these were collected - one was partially eaten by a shark before we picked it up. Throughout the rest of the day shear-water Petrels made up most of the sightings - these usually individuals. Only 6

R.S. Crossin
1965

Journal

24 Aug. ^{cont.}

20° 42' N; 164° 31' W — 21° 32' N; 163° 17' W

Sooty Terns were seen during the entire day. A number of Bulwer's Petrels (24) showed up during the day - usually as individuals. One Golden Plover came about the ship but was missed when shot at.

25 Aug.

Sighted a large flock shortly after 0600 and worked with it until 0900. Many newell's shearwater (1 collected), one Pale-footed Shearwater seen at close range, hit, but got away. Red-footed Boobies, Blue-faced Boobies, Frigates, Hawaiian Noddies, Noddies (many sitting on the 0), Wedgetails, and 2 Skuas. We lowered the skiff and Doyle and Woody went out. One skua came high over the skiff and Doyle collected it about 3 times - hit hard, but flew off. Doyle said it finally fell into the sea, but they were unable to find it. We could not see it fall from the Shearwater and even though we later went over in that direction, ~~nothing~~ nothing turned up. One Red-foot Booby immature was sighted at very close range to the Shearwater with an orange streamer. Not collected, because the lighting was excellent and the bird was obviously a specimen. Marked this year.

R. S. Crossin
1965

Journal

3 Sept.

Kauai, Hawaii Fleet, Crossin, Toddoff
arrived on Kauai from Honolulu
at 1400 - Hawaiian Airlines. Rented
a Volkswagen at the airport and
went to check in at the Kauai Surf
Hotel where we had reservations. After
getting squared away at the hotel,
eating etc. we drove out to
Kilauea Lighthouse off Rt. 56,
arrived 1830 and proceeded to make
a pop-count of Red-footed Bobbies,
Frigates and Wedgetails. One segment
of the Bobby colony was on the east
slope of the point adjacent to the lighthouse,
another segment was just south of
this on the east slope. An island to
the north a few hundred yards off
shore also contained a colony of
Redfoots and one of Frigates.

Estimate of Point about 400 RFB.

Count - ad - 130

Subad. 10
Imm. 158
Nestling 20.

Estimate on Island

RFB 130

G. Frig. 200

A number of Redfoots came in
to the point through the night plus
those that were seen going into
nests below the edge of the cliff
probably would run the total up to

R. S. Crossin
1965

Journal

3 Sept. cont.

Kauai cont.

about 650 for both island and point.
55 were banded at the point (no
possibility of reaching the island).
25 returns were taken.

Wedgetails were scattered all
around the point on all 3 sides and
down over the cliffs. The cliff is
more sheer on west side - ca. 300
- 400 ft at ~~any~~ ^{the} point. Most birds
are inaccessible. The majority of
birds started coming in just at
dusk. Burrows are scattered through
the dense shrubbery along the road
in the grass patches on all sides of
the point and down over the cliff,
presumably in dirt patches along the
ledges. The few nests checked in
front of the lighthouse contained
chicks about 1/3 grown. The ground
is very hard and cannot be dug
out by hand - hence the few burrows
checked. An estimated 5000 adults
about. 133 were banded and 54
returns were recorded.

After moving through the Red-
foot colony once, the birds spooked
at second attempt and the rest
of the time spent on wedge-tails.
Party finished work at 0130
and returned to hotel.

1965

21°17'N; 157°53'W

1st day out

Honolulu, Hawaii 20°45'N; 159°14'W

7 September Leave Honolulu 1015 aboard Shearwater with crew of 9. Started picking up Newell's Shearwaters after leaving the harbour complex, and shortly afterwards Sooty Shearwaters. Continuous sightings of both these species throughout early afternoon. All sightings so far (1620) have been in a southerly direction for the Sooty Shearwaters. The predominance of Newell's were headed north. Bulwer's Petrels are scattered intermittently with no prevailing direction of flight. A few Leach's Petrels showing up. Very few terns, these mainly Noddies.

Most Sooty Shearwaters are moving in fact direct flight with very little sustained gliding - the flight being a series of strong flaps. Woodward says this is not typical flight. A few were noted making high arcs and moving along with little flapping. Three were noted sitting on H₂O with 3 Bulwer's. One Black-winged Petrel seen.

Scattered Bulwer's Petrels and mostly continuous sightings of Sooty Shear. and Newell's Shear for remainder of day. Total of 556 birds. Shearwater-Petrel predominant (330). Total of 14 species.

1965

20°01'N; 161°14'W - 17°12'N; 163°20'W

2nd day out Honolulu

8 September sunrise to 7:40 - scattered but fairly numerous sightings - Wedgetails, Sooty terns, lesser number of Newell's Shear + Sooty Shear. a few *P. hypoleuca* and one White-neck P. at very close range.

0740 → Relatively few Sooty Shearwaters as compared to yesterday. The number of Newell's dropped drastically also. Sooty terns, however, increased tremendously over yesterday, and accounted for over half of the total which = 2219.

A few enormous feeding flocks brought the total up to 5 times as many birds as yesterday. One flock of 1367 birds at 1700 composed roughly of 50% S.T., 50% wedgetail was investigated quite thoroughly by running the ship into it and following. The majority of terns scattered off, but wedgetails continued feeding with not much concern for the ship. Large numbers would congregate and settle on the H₂O, advancing slowly by portions lifting off the H₂O a few feet and settling back. Wedgetails which were scattered about and occasional Sooty terns would advance rapidly toward such milling segments of the flock. A few were seen jumping on several occasions; flying fish were also flashing quite abundantly. Two orange streamers. Sooty Terns were recorded today.

R.S. Crossin
1965

Journal

20° 01' N; 161° 14' W —
19° 12' N; 163° 20' W

2nd day at Sea Sic 9

8 Sept cont.

a two hour session of night watch was held from sunset (1803) to 2000. catch of 25 birds were recorded - all Shearwater-Petrel. A nearly full moon helped some off its port side. One light is turned out (port side) so close observation is limited to starboard side. The few wedgetails that came under the light after full dark could be determined quite readily. The two hour watch tonight is more or less a practice run for the next two nights n + s of Johnston when I intend to hold 4 hrs of noc. obs.

18° 23' N; 165° 16' W —
17° 36' N; 167° 24' W

3rd day at Sea SIC 9

9 September

total numbers dropped drastically from yesterday. Total today for diurnal observations = 698; shear-pet 184; tern 489 - 7 medium sized species ^{made practically} the total number (632). Wedgetails and Sooty terns were the abundant species. a few Brown Island Petrels (4) and 17 P. externa were scattered throughout the day's observations. two Jaegers (species?) were seen, one almost surely a Long-tailed. A good percentage of the sooty terns were immatures. One adult was observed with orange streamers

R.S. Crossin
1965

Journal

18° 23' N; 165° 16' W —
17° 36' N; 167° 24' W

3rd day at Sea Sic 9

9 Sept cont.

nocturnal observations were held from sunset (1817) to 2206. a total of 131 birds were seen; 120 of these were accounted for by a flock seen feeding 13 minutes after sunset (1830). Only shearwater-petrels were seen after this. 95 sooty terns were recorded in the flocks.

16° 45' N; 169° 22' W —
16° 18' N; 169° 43' W

4th day at Sea - Sic 9

10 September

Johnston Island in sight before sunrise. A strange absence of birds upon entry into Johnston. Sooty terns were particularly scarce in comparison to visits to or near Phoenix during July and August. Two Brown Booby imm's and one sub-ad Red-foot were seen with orange streamers upon pulling into port at Johnston. Purpose of stop here is to refuel and re water so that the Shearwater will have the designated 30% fuel upon reaching Pago Pago. Docked in Johnston at 0745.

Bad leak with a ^{oil} fuel line in the engine room kept us at Johnston until 1515. Few birds were encountered during the rest of the day, although Sooty terns were more in evidence.

1965

16°45'N; 169°22'W

10 Sept - cont. 4th day at Sea Sic 9 16°18'N; 169°43'W
During this time, one orange-tagged
Common Noddy, 5 Wedgetails w/ orange
streamers and one sub ad Red footed
Booby, ^{w/ tag} were seen during the remainder
of daylight observations. One large
flock of over 100 birds was observed
at 1730. Apparently many if not
most of the birds between Johnson
and this point were concentrated
in this flock.

Nocturnal observations were
carried on from sunset (1824) until
2210. A total of 18 birds were
accounted for during this time. One
Tropicbird sp. and one Sooty tern were
noted - the rest Shearwater Petrel, mainly
Wedgetails of those that could be identified.
Both side lights were in use ~~but~~ to-
nite, but of course visibility is
limited to about 50-70 yds. One
orange streamer wedgetail was
observed at 2050. The streamer
showed very clearly when the
bird banked away from the light
with underparts toward the ship,
even though it was in the outer
limit of the light. It made a
circle around the ship and Woodward
was seen clearly from the
fantail.

1965

SR-55

11 September 5th day at Sea Sic 9 14°30'N; 170°25'W - 12°44'N; 171°15'W
A few Sooty Shearwaters began showing
again today. Yesterday none were seen.
Juan Fernandez Petrel began showing
(18) including 3 white neck and 6 mid.
P. externa. 8 P. hypoleuca were also
observed 3 were close enough to
be called Black-winged Petrel with
certainty. No Bonin Islands were seen,
so the mid P. hypoleuca may well
have been Black-winged. A number
of immature Sooty terns are showing
up - 32 seen out of 247. This of
course, does not mean that 215 ad.
were seen - a good percentage of these
could well have been imm. also, but
the birds were not close enough
to determine in most cases. 41 of
the 62 Wedgetails were dark phase.
Most of these seen at fairly close range
appear to be the very dark southern
hemisphere forms.
Night observations were held
from sunset ~~at~~ 1828 to 2000.
Only one Sooty Shearwater was
seen and this before complete
darkness. 6 flocks were seen,
3 of them feeding flocks. All 6
flocks accounted for 88% of total
birds seen. Flocks primarily
of Sooty terns, lesser no. of wedgetails.

R. S. Crossin
1965

Journal

SR SS

6th day at Sea, Sec 9 - 10°42'N; 172°02'W - 8°58'N; 172°53'W

12 September

The number of birds picked up greatly today = total of 900. Sooty Shearwaters were in abundance - 101 + 22? I believe these to be all sooties. Some of the boys are trying to make slender bills out of every sooty that doesn't fly quite right or if silver doesn't show under the wing. I think lighting, wind conditions and individual variation can well cover any slightly unusual birds.

All sooties were going in a southerly direction. Plenty of small to medium flocks (21) amounting to 791 of the 900 birds banded. ^{SR} ^{SS} If birds were collected

7th day at Sea, Sec 7 7°09'N; 173°36'W - 5°49'N; 173°59'W

13 September

Sea was perfectly calm, practically all day - some very faint undulations but not a white cap over the entire expanse. Birds could be seen for better distance than I have yet encountered. Sooty Shearwaters were the abundant species 291 out of 510 total, 80 sooty terns were recorded and 54 Wedgetails. 27 small to medium flocks were recorded, only 3 of these feeding flocks. Late in the afternoon Doyle and Woody went out in the skiff and collected 1 sooty Shearwater and 3 dark phase wedgetails. One Juan Fernandez Petrel was collected earlier in the day.

R. S. Crossin
1965

Journal

R SS

8th day at Sea, Sec 9 5°06'N; 175°00'W - 5°08'N; 176°00'W

14 September

Running W on 5° N line today and will continue until 1800 when we are due to head south to Howland. Began raining last night after a perfectly clear, calm day yesterday and at noon today is still raining. Mainly Sooty Shearwaters passing south today - few wedgetails - visibility quite limited due to the rain.

This is the second day in which I am practically useless as far as helping with the work is concerned about midnight 12-13 my stomach started hurting and nausea and pain has been with me since. I have little doubts that it is none other than my ulcer acting up. I am now taking medicine given to me by Mr. Ashton, but it has not helped the burning pain nor the nausea.

Sooty Shearwaters have been the prominent bird all day. Three were collected from the Shearwater. We were unable to put the skiff in because the winch is broke. The sooties have been going by, usually out of gun range, by dozens and scores - all bound southward. The three collected vary considerably from the large bird collected yesterday.

14 Sept. cont. 5th day at sea, Sic 9. 5°00'N; 175°00'W - 5°08'N; 176°00'W
All three specimens of today are smaller in all respects and do not have the white-streak underwing patch. The crew is convinced that we have Slender-billed Shearwaters. Perhaps so, but I am as yet unconvinced.

A few wedgetails have been seen, all dark; one jaeger, a Greater Frigate and at least one Ruddy Turnstone. Terns have been very scarce. Probably the bad visibility of today has limited our observations of flocks off on the horizon.

Flock data

Since the Sooty Shearwaters, or whatever they are, come through in almost a continuous stream, it is quite incorrect to consider any number of birds above of a flock, and yet in a sense, they are almost one continuous flock. The main source of tabulation has been to note the total number seen over periods of 5 minutes. Otherwise too much time is lost in noting each sighting and birds are missed. Even though birds come up to the ship, say, in groups of 10-20, these may break up and some join other lesser

14 Sept. cont. 5°00'N; 175°00'W - 5°08'N; 176°00'W
or larger groups so that any notation of flocks would have little meaning. None have ever been noted to feed. On specimens collected, the gonads are up - probably 1/2 - 3/4 breeding size; Stomachs have been empty and very heavy fat present.

Of a total of 8,984 birds seen today, 8,978 have been Shear Pet and of these 8,933 have been Sooty Shearwaters = 99.4%.

15 September 3°07'N; 176°27'W - 1°25'N; 176°30'W
Sailing South all day. expected to arrive Howland Ca. 10:30 p.m. An abundance of Sooty Shearwater, but only slightly over half as many as yesterday. Total birds 5412, SS 5253 = 97%
Wedgetail and Sooty tern were very sparse 51 and 29 respectively most of these encountered in two flocks.

Arrived Howland 2300. Loaded gear and showed off in rafts ca. 0030. (16th)
Fleet and Ashton went in first with the stiff - made a bad play and flipped the stiff over part off the beach. No harm done. Both rubber rafts landed without incident. Whole crew abore to get blood work done and Berlese samples collected.

R. D. Crossin
1965

Journal

SR

55

Howland Island — $0^{\circ}25'S$; $177^{\circ}01'W$

16 September

Had to go about 1 mi with rept before landing as ship was anchored at opposite end of island from landing place at the lighthouse. Briefly set up camp and split party into 3 groups (2 for blood work and one for Kerles). Heavy rains had completely soaked the island. Vegetation about high and very luxuriant. Only got half the needed blood samples because of lack of birds - Sooty terns apparently absent. All samples from ^{on} Frigate, Red-foot and Blue faced Boobies. Arrived back at the ship at 0715 a.m. - Headed south for Baker.

A few flocks of sooty tern + few boobies were encountered between Howland + Baker, but most birds seen were Sooty Shearwaters. tremendous numbers were encountered coming in to Baker - up to 150 per minute were recorded streaming past the ship. Birds passed around the island on both sides, but more appeared to near east to go around it. Arrived at Howland shortly after noon. Put Woodward + to doff ashore and proceeded SW at 1300. A total of 11 flocks were noted from Baker to sunset. Primarily of Sooty terns, but some frigates and Boobies during the early afternoon.

Sooty Shearwaters were abundant

Begin Grid.

R. D. Crossin
1965

Journal

SR

55

Howland Island — $0^{\circ}25'S$; $177^{\circ}01'W$

16 Sept. cont

all afternoon. At total of 16,668 birds recorded for the day, 14,958 of which were Sooty Shearwaters. Wedge-tails were very sparingly represented (22), Sooty terns 1,584 - these of course due to the abundance of flocks. 4 hours of night observation yielded only 5 shear ^{pet.}

$1^{\circ}04'N$; $177^{\circ}35'W$ — $1^{\circ}17'N$; $176^{\circ}04'W$

17 September

Running NW until 0830, then turned directly E for the northern tip of the Grid. Scattered sightings of Sooty tern were practically all headed E-NE more or less in general direction of Howland.

On the eastward leg birds were very sparse; four sizeable flocks were noted throughout the rest of the day. These flocks encountered throughout the area are distinctly different from northern flocks. Wedgetails play practically no part in these, although a few are normally represented in larger flocks. Boobies, usually Blue-faced are present in most large flocks. A total of 162 birds seen, Sooty terns making up 87.0%. Only 7 Sooty Shearwaters were seen. Apparently the huge numbers encountered enroute south have been practically the bulk of the migration. A pronounced western limit is apparent at about $178-179^{\circ}W$.

R. S. Crossin
1965

Journal
SR
SS

17 Sept. Cont.

^{SR}
1°04'N; 177°35'W — 1°17'N; 176°04'W

A few shorebirds (Ruddy Turnstone, Golden Plover) scattered throughout the days observations. At sunset we turn S. Due to go into Baker to fix radio for shore party.

Night observations were run from sunset (1844) until 2200. A total of 13 birds seen - mainly Shearwater Petrel.

Night radio call to Howland gives discouraging news. Fleet reports only about 35 Sooty terns heard over the island at night - Very few frigates of either species and relatively few Boobies. With no streamered terns, it will be nigh impossible to tell for sure where the terns in the grid are from and what base is being used.

18 September

^{SR}
0°02'S; 176°08'W — ^{SS}
1°26'S; 176°38'W

A very few scattered flocks of Sooty Shearwaters heading south. Scattered flocks of Sooty terns - none extremely large → 200. These generally scatter far and wide as soon as ship starts to approach. The birds never seem to be actively feeding. Fish, if present, invariably have dispersed by the time we arrive. The terns have a tendency to go very high

R. S. Crossin
1965

Journal
SR
SS

18 Sept. Cont.

^{SR}
0°02'S; 176°08'W — ^{SS}
1°26'S; 176°38'W

before dispersing. A few scattered shorebird sightings, few Boobies, Jaegers, tropicbirds.

A total of 1271 birds of which 1119 were Sooty terns = 88%, these practically all restricted to flocks of which a total of 13 were encountered.

Nocturnal observations were held from sunset to 2200 - a total of 7 birds seen.

19 September

^{SR}
last day of Grid II 0°32'S; 177°39'W — ^{SS}
0°31'N; 177°03'W

Scattered large flocks of Sooty terns through the days observations. Sooty Shearwaters have been present through most of the day, but numbers are very sporadic. At times a steady stream of birds will be passing thru, and at other times a few scattered individuals for an hour or more. Most tern flocks not actively feeding and it is very difficult to approach them. They have usually scattered or gone up to great heights. Shorebirds (mainly Golden Plover) scattered throughout the area. A total of 3218 birds. (more terns (1863) than Shearwater Petrel (1329) - flocks being composed primarily of Sooty terns. Expect to be back at Howland ca 2200.

^{SR}
20 September Honolulu to Baker & thence to McKean
Picked up party of four from Honolulu and head for Baker ca. 0300 a.m. Picked up party of two from Baker in early morning and headed for McKean.

A total of 13,851 birds seen today, 13,078 sooty shearwaters, only 1,435 sooty terns. A total of 15 flocks (1728) and 10 feeding flocks (1301). Sooty terns making up most of the flocks.

McKean Is near Position

21 September Observations from Sunrise to 1030 when we arrived at McKean. A total of 373 birds and 3 flocks (115). Only bird different from previous observations was a few Blue Grey Noddies showing up as we approached island. Only 128 Sooty Shearwaters; 144 Sooty tern. Fleet reports from island that Sooty terns are very few and probably will have only two days work at best.

Manana Island, Oahu, Hawaii

30 September Party of Heikman, Crossin & Mage worked Manana night of 30th. Common Noddies still abundant on all ledges, Cliff facings and higher ground around rim of the crater. Estimated 20,000 birds. Perhaps 10% large chicks, a few yet unable to fly.

Wedgetailed Shearwaters all had half-grown to 3/4 grown chicks. Estimated 60-75,000 Wedgies on the island. Adults started coming in just at dusk, generally came in high over the island. Chicks usually tucked away in burrows during daylight hours, more prone to emerge from burrows after dark.

Banding	Chicks (all wedgetails)	adults
Heikman	100	600
Crossin	100	900
Mage	100	400
	300	1900 = 2200 total

Mage did very well for the first time at banding; I expect him to do quite well after he gets the feel of it.

Banding went well as no moon up and adults were relatively calm and easily picked up. Probably no more than 20% of adults had chicks.

7 October
 Manana Island, Oahu, Hawaii
 Party of Cly, Gossin, Mage and
 Chapman and George Young (Salt Lake)
 worked Manana night of 7 October -
 moon up most of the night, had banding,
 few light breezes. Cly banded 100
 Common Noddies, but rest of party
 banded Wedgetails the entire night

Banding (Wedgetails)

	chicks	adults	
Cly	ca. 350	ca. 250	200
Gossin	ca. 300	ca. 400	700
Mage	100	600	700
Young	ca. 150	ca. 150	300
			2400
		+ 100 Noddies	2500

one Curlew, possibly same one seen
 on 30 September was on island.
 About 10 rabbits seen, dozens of mice
mus, one collected. Noddies about
 same status as 30 Sept. A few Sooty
 terns seen over island (mainly imm.)
 on both visits. One Black Crowned
 Night Heron seen on the island
 at dusk. Ca. 33 blood
 sera samples taken from ad. Wedgetails.
 Left island ca. 8:30 a.m.

note: some wedgetails chicks ca.
 2% with primaries + secondaries
 protruding from feather sheath.

10 October
 Pago Pago, American Samoa.
 arrived ca. 0600 aboard Pan Am flight
 811. Island quite tropical - reminds one very
 much of Oahu, Mexico lowland rain
 forest. Saw few birds - the blue Kingfisher
 Halcyon chloris, Cardinal, Honeyeater, Red-
 vented Bulbul, ^{small swift at 7.} Most of crew went
 over to Western Samoa ^{for 4 days}, returned today

11 October
 Pago Pago \rightarrow $13^{\circ}04'S, 170^{\circ}52'W$
 Left Pago Pago aboard Shearwater 0930,
 headed for Baker. Relatively few birds
 first few hours, for being so close
 to a large land mass such as this.
 Red-foot Boobies common, Fairy terns,
 few wedgetails (dark), Noddy terns. One
 mottled Petrel about 5 after 2 P.M.
 Flocks picked up somewhat total of 20 (1114)
 16 of them Seeding flocks (1016). Three most
 numerous birds were Common Noddy (570)
 Red-footed Booby (355) and Fairy tern (213).
 Red foots practically all the dark gray phase,
 only 2 white phase seen.

2nd day N Samoa $11^{\circ}15'S, 171^{\circ}48'W - 9^{\circ}16'S, 172^{\circ}28'W$
 160

12 October
 Very few birds seen - mainly scattered
 singles. Only 3 flocks - all small. Only
 interesting sightings were mottled Petrels,
 52 (1/3 days birds) all headed in a general
 SW direction. The dark abdomens were
 diagnostic. These birds not only fly
 with high arcs like the sooty shearwater
 billed Shearwaters, but they also
 avoid the ship like them.

R.S. Brown
1965

Journal

SR

2nd day N Samoa cont ^{SR} 11°15'S; 171°48'W -
^{SS} 9°16'S; 172°25'W

12 October cont

A total of 32 Sooty terns were seen, in two small flocks. A number of Gould's, Black-wing and Vermadee Petrels were seen throughout the day observations. No areas of high concentrations were noted - birds scattered sparingly all day. Wedgetails still all dark - 15 seen. Possibly one Palefoot seen. One Audubon's shearwater before SR.

N

SR

SS

3rd day out of Samoa ^{SR} 7°34'S; 172°10'W - ^{SS} 5°56'S; 173°36'W

13 October

Relatively few flocks (2) even for this area. The two most common species seen were Sooty/Slender-billed Shearwaters (218) and Sooty terns (221). Most of the terns were concentrated in the two flocks. Sooty-slender-bills were scattered through the day observations. There were generally all small groups of ca. 5-10 birds except for one large flock of 54 and another of 25 shortly before sunset. The majority of sightings which were close enough to discern under-wing patterns showed light which may or may not mean Sooty Shearwaters.

Night observations were well from SS to 10:00 P.M. one feeding flock was encountered after sunset (32) 28 Sooty tern and 4 wedgetail

R.S. Brown
1965

Journal

SR

SS

4th day N Samoa ^{SR} 4°55'S; 174°46'W - ^{SS} 2°38'S; 175°19'W

14 October

Birds fairly scarce all day (214 total). Sooty/Slender-billed Shearwaters dropped to a low 24, terns 120. Only two flocks, both predominantly Sooty terns. Night observations for 4 hrs yielded not a single bird.

SR

SS

^{SR} 0°45'S; 175°58'W → Howland
^{SS} 5th day N Samoa
Howland & Baker

15 October

total number picked up today (365), mostly Sooty tern (229) in two feeding flocks. Sooty-slender-billed Shearwaters also picked up some (59), 1 collected. Prapire were very abundant at both Baker & Howland. at Baker about 200 came out from close off-shore as we approached the island. They swam in front of the ship as we went round to land Kepler & Harrington.

at Howland the porpoises again swam out from near shore as we approached and swam in front of the ship. Here at least 300. Put Fleet and Wake ashore and started on NE leg of Grid.

held all night watches and had rain all night long birds abundant (409) 390 of these Sooty tern. Impossible to say how many of the birds seen were repeats which return again and again to the ship - at one time

Red Crossin
1965

Journal

SR
0°45'S; 175°58'W

Howland + Baker + NE — Howland SS

15 Oct cont. when the ship stopped for a BT, a rather small flock of Sooty terns circled around the ship and one split from the flock and landed on the water just beneath the side light. It sat calmly in the water for about 3 minutes, peering about, and then flew off. This is at least the 5th instance I have seen of a Sooty settling on the water and taking off.

16 October

SR SS
6th day N. Samoa 1°26'N; 176°17'W — 0°09'S; 175°30'W

Rained all morning long, overcast and some drizzle in through out P.M. only 367 birds, 252 of these Sooty/Slender-billed Shearwaters. only

1 feeding flock (exclusive of Sooty terns).

Night observations yielded only 77 birds, 45 of these Sooty-Slender-billed before sunrise. Night clear and so perhaps the birds were not attracted to the ship's lights as they had been the night before. Terns did not come close tonight as they had on night

of 15 during storm.

SR SS
0°02'S; 176°36'W — 1°05'N; 177°07'W

17 October

7th day N. Samoa.

Sooty/Slender-billed Shearwaters very abundant all day long, usually in flocks of 5-20. Mottled Petrel

Red Crossin
1965

Journal

SR
0°22'N; 178°08'W

9th day N. Samoa South Grid 1°02'S; 177°18'W^{SS}
Although we duplicated almost exactly one track of last month's Grid where huge flocks of Sooty tern (Total 1000) were seen on 19 Sept., today only 3 Sooty tern were recorded. A complete shift of all birds in this area to some other point.

An oil slick (Wesson cooking oil) was spread out starting at 12²⁵. We stayed in the vicinity for 2 1/2 hrs. within less than an hour after slick layed out, a Wilson's Storm Petrel came into it and started feeding. At the end of the two + 1/2 hrs. at least 7 of them had come to feed. Bueler collected 3 from the ship, wounded at least 2 others. This is supposedly first collect of this species on the project. The Wilson's dabbles its feet as it feeds. Hancock's does not feed in this manner. Both however are in the area and any unidentified storm petrel could be either in this area at this time. They appear too similar to be told apart in the field except for the feet dabbling of the Wilson's.

Night watches were again held throughout the night. At about 11:30 pm we started passing through a small

R.D. Crossin
1965

Journal

9 Day N. Samoa ^{SR} 0°22'N; 178°08'W — ^{SS} 1°02'S; 177°19'W

19 Oct cont

which lasted most of the rest of the night. started collecting birds off the port side and picking up was relatively easy by letting the ship drift down upon them. During the most intense rain, the birds would come in quite close and very large. Mottled Petrels came in toward the light quite high, one at least 70 ft up. 3 of these were collected, 2 noddy terns, 1 Wilson's Petrel flew on the ship, and 16 Sooty terns were collected, one of them banded. Shooting lasted until about 0230 when birds thinned to practically zero. only 3 were seen after this time.

10 Day N. Samoa ^{SR} 0°49'S; 177°54'W — ^{SS} 0°18'S; 176°29'W

20 October

Put out an oil slick about 0530 and by daylight it had spread over a good 10 acres. Ship was stopped during this time. We used fish oil and laquer that the paint crew uses for mopping with ship paint. Two storm petrel came in, but evidently the laquer is prohibitive to the small crustaceans or to the petrels for they would not remain on the slick. Yesterday's version oil slick kept the birds in the area. we left the area at 0720 when the birds were not

R.D. Crossin
1965

Journal

10 Day W. Samoa cont ^{SR} 0°02'S; 176°36'W → ^{SS} 1°05'N; 177°07'W

17 Oct cont

were irregularly spaced throughout day. I took a long, long shot at one and dropped it — supposedly the first one that has been collected on the project. Doyle went out in the ship during the morning, but failed on the Sooty — Slender bill flocks. He collected one imm. Sooty tern banded last month on Hull Island. Flocks (mainly Sooty tern) scattered throughout the day — several sooties collected, no other banded birds however.

Three medium-sized flocks composed mainly of sooty terns were sighted.

a total of 8 birds collected (1 mottled Petrel, 1 wedgetail, 1 common noddy and 5 Sooty tern).

Nocturnal observation was held at night again. mainly scattered Sooty tern sightings. ^{SR} 2°00'N; 177°28'W

18 October

8 Day N. Samoa south. ^{SR} 1°04'N; 177°09'W ^{SS}
NW portion of bird — Very few birds, no Sooty tern flocks, Sooty Shearwaters thinned out considerably.

Jeff collected a Hancock's storm Petrel, supposedly 1st one for project.

total 266 birds (189 Sooty, 50 shear) only one trailing flock of 6 Sooty terns. Nocturnal observation 32 birds, mostly Sooty tern.

20 Oct cont 10 Day W. Senon 0°49'S; 177°54'W - 08°18'S; 176°29'W

Sooty - Slender billed Shearwaters were evident in considerable number throughout the day (total 1188). 5 flocks of terns + murrelets were encountered, but the intensive feeding was not evident in any of these and a total of 2 birds were collected (1 ut + 1 st.). A few (5) mottled petrels are still coming through with the Sooty Shearwaters. Night Shearwaters were halts about 2300 because we could not use the sidelights while attempting to find Baker Island. Heavy squalls all afternoon had prevented the crew from getting any sort of decent fix. The island was finally spotted on radar about 0200.

~~Howland~~

11 Day W. Same as Baker Island

21 October

Three of the ship's crew went in to get Harrington + Kepler off Baker and flipped the raft on the way out. An hour later 0800 we are still waiting to see whether it will be necessary to go in with another raft and a fresh motor to get them off. Surf quite bad after yesterday and last night's storm. Took another raft in and pulled the first raft past the bad part and things went

21 October cont

Baker Island, Howland Island

along well from there. Harrington and Kepler report very few birds on Baker as would be expected.

Arrived at Howland about 1300 and both rafts went in - one all the way in to pick up the boys. The raft that went in towed a line in from our raft and we stayed outside the breakers. After loading the raft we started towing them out and nearly had them through all the surf when a wave evidently caught their bow and turned it to port.

I had one fleeting glimpse of the raft as it went sideways just about on the crest of the wave and then the entire thing was over. All 5 people (Carlton, Polly, Manous, Fleet and Vial) made it back to the beach ok.

We came back to the ship in our raft and after much water trouble lay light has run out and we will be unable to go into the island tonight. Have dropped anchor. Rain all afternoon. The people on the island have set up the tent, but radio is not working out undoubtedly motor is out of commission for the boat. We will attempt to run a line in tomorrow morning.

Howland - Canton $0^{\circ}04'N; 175^{\circ}39'W$

22 October

shoreparty of 5 o.k. in morning when we took another raft out. The sea was so rough, however, that we could not get in close and we returned to ship. Shoreparty walked the raft around to the east (leeward at present) side and got out through the low surf there. Only problem was the abundance of sea urchins offshore there. We picked them up and left area at 1000. A few painted and streamered Blue faced Boobies and Brown and one Red foot from Howland were seen out to about 30 miles from Howland. 13 flocks were seen throughout the day, total birds 616. Nocturnal watches held from 2000 to 2400 only 2 birds. Run out of grid (100 mi from Baker) at 2400.

$0^{\circ}57'S; 174^{\circ}05'W$ — $1^{\circ}58'S; 172^{\circ}54'W$
Between Canton + Howland Islands.

23 October

Almost all birds (86% of 896) concentrated in 4 large feeding flocks - Sooty terns always most numerous by far. On two occasions an adult and immature Sooty tern were seen sitting on the ground. In one instance the immature was fed by the adult. An Arctic tern was collected out of a feeding flock of mixed tern and shearwaters.

$2^{\circ}12'S; 170^{\circ}15'W$

Canton Island -> X-mas Is.

24 October

Shearwater at Canton at daylight. Boat came out from Canton with the two men from coast and scientific survey - loaded gear and left Canton at 0650. Very few birds throughout the day. Over 3100 recorded while stopped at Canton. mainly single sightings, throughout the day. A few mottled Petrels winging S. I banded one and ~~two~~ ^{three} others came close enough to be shot at. Sooty/Slender-billed Shearwater, have practically stopped - only 2 today. A few Pterodroma hypoleuca starting to show up - Sooty terns practically absent - only two showed - both collected. Expect to arrive at X-mas Is. on 28 at 0600.

Sea very choppy today - traveling into wind - visibility bad. No flocks other than the few large ones over Canton early in morning. One banded Red-foot Booby was collected - banded on Underbury 1964.

$1^{\circ}39'S; 168^{\circ}30'W$ — $1^{\circ}00'S; 167^{\circ}05'W$
Between Canton + X-mas Is.

25 October

scattered small flocks throughout the day, sooty terns predominant. Total of 503 birds, 10 collected: 1 wedgetail, 1 RTTB, 1 RFB and 7 sooty tern. Mottled Petrels still moving - through 7 S, singles, 33 total. One subad BFB with a blue streamer was seen in the morning by fleet. Black-winged Petrel, now showing up - 14 total.

A. S. Crossin Journal 55
 1965 SR
 0°15'N; 165°06'W — 0°26'N; 163°20'W
 Between Canton & Xmas Is.

26 October A few large flocks, scattered small flocks. 7 flocks 586, predominantly Sooty tern. 12 Birds collected: 1 Wedgetail, 2 banded BFB, 2 RFB, 5 Sooty tern, 1 fairy tern, and one Leach's storm Petrel. This now brings a total of 3 storm Petrel species collected on this trip. It remains very doubtful if any of these white-rumped species can be told apart with certainty at any distance from the ship. If they are close enough to be identified - they are close enough to be collected. Mottled Petrel still moving through - 13 total. 22 Whales seen - one large group of 20.

SR
 0°51'N; 161°33'W — 0°24'N; 159°55'W

last day before Xmas - Canton → Xmas

27 October Sea rough today, as is best wind, causing into it made for bad visibility. We are behind time so no flock chasing. Collected 9 birds from the steamer. Total 572 birds small to medium sized flocks (10) throughout day. Mainly Sooty terns (396). First Juan Fernandez Petrel seen in some time, few mottled Petrels still moving through. Abundance of Red-foot Boobies (39)

A. S. Crossin Journal 55
 1965 SR

1°52'N; 158°12'W → Christmas Island
 Christmas Island, N. Pacific Ocean

landed shore party at 1145. Mr Woodell, the resident Commissioner, has provided lodging for the entire Smithsonian party of 9 in the officers mess Bldg. very lush. There will be a landrover for transportation. The party made a survey in the afternoon. Three more less separate Sooty tern colonies were noted; one on the NE point, one a few miles farther on from the village and one just beyond Carver way. All were without chicks or eggs, although the last colony had a few full grown, flying immatures.

Following species observed

Phoenix Is Petrel	25 - 30	
Red-tailed Tropicbird	400 - 500	thickly populated, but seen all along road. esp. on S. side
Masked Booby	200	
Red-footed Booby	250	
Frigatebird sp.	50	
Golden Plover	200	actual count 108 1610 to sunset
Ruddy turn stone	8	actual count "
Wandering Tattler	15	" " "
Erolia sp.	4	" " "
Bristle-thighed Curlew	6	" " "
Pintail Duck	3, possibly 4	
Sooty tern	> 75,000	
Graybacked tern	7 20	
Common Noddy	7 10	
Hawaiian Noddy	50	
Blue Gray Noddy	200	
Crested Tern	50	

A. S. Crossin
1965

Journal

Christmas Island, Pacific Ocean

28 October cont.

Spec. nesting cart.

- Fairy Tern 5
- Scarlet-breasted Lorikeet 2
- Christmas Island Warbler 5

Party of Crossin, Tordoff & Harrington took landrover about 15 miles out from London along N. end of island for purpose of collecting. 1610 - Sunset.

Following species collected.

- Crested Tern 2 ad, 1 subad.
- Bristle-thighed Curlew 2
- Golden Plover 2
- Scarlet-breasted Lorikeet 2

Ymas Island

29 October

Australian Commissioner says that the previous D.C. definitely brought some Scarlet-breasted Lorikeets from Fanning some years back, so that it is definitely certain that they were introduced.

Party went out again to survey west side of main island. Sooty Terns on the N. side were still in the air as was the colony at Carver way. This appeared to be in the process of leaving the island as we came up - vast numbers were flying low out toward the ocean. A few samples of sera were collected - 2 BFB, 1 RTTB and 3 cats. One BFB, 1 RTTB and 2 Shorelarks were collected.

A. S. Crossin
1965

Journal

Ymas Island

29 Oct. cont.

Party returned in late afternoon.

Evening Fleet, Tordoff, Woodward & Hunted went out to make Opera to band, collect sera & survey.

Crossin, Tordoff, Mage, Amerman and Harrington went back to south side of island to collect sera and band. All three colonies of Sooty Terns (2 on N end, 1 on Carver way) were either absent or a very few high up in the air. Only a few full grown immatures were seen on the ground, these at the Carver way colony. Party proceeded down Carver way to where Frigate had been seen earlier in the day along the lagoon area. 40 Red-footed Boobies were bled and banded and 8 Blue-faced Boobies and 2 Great Frigate birds - bled and banded. 12 wedge-tailed Shearwaters blood sera samples were collected. 7 cat ^{sera} samples were also collected - cats being shot first.

The cats apparently are very numerous I would imagine close to a thousand on the main island. One litter of 4 kittens.

The small wedgetail colony had large feathered young, all dark phase seen. about 50 in the colony ad + young.

Boobies were not nesting ^{around island} all 3 RFB Red-footed Booby, were perched in

Christmas Island

27 Oct cont

Messerschmidia trees. I swam out to a small island in the lagoon where frigates were seen. Perhaps 50 nests with large, ^{fully hatched} young were scattered about the island, but all adults flew off when I started into the small colony. A few noddies & Blue Gray noddies were roosting. About 4 or 5 Phoenix Island Petrels were seen under small bushes, no sign of nesting. Petrel was calling in their Androcopos-type twitter. Party returned at 0430 30th.

Christmas Island

30 October

Party of Cronin, Woodward, Wepler, Mage, Harrington, & Amerman went out with land rover to survey "Blue Gray" and "Little Blue Gray" islands on south side of Xmas. "Blue Gray" was covered with about foot high to two feet high grass, Lepturus and Portulaca.

About 10 pair of Blue-gray noddies, 10 pair Common noddies and ca 100+ white throated Storm Petrels in some stage of nesting. (Common noddies with 2/4 incubated eggs, Blue gray with fresh to incubated eggs, WISP with fresh eggs, many sitting on empty nests. 4 returns on WISP, 13 banded.

30 Oct cont

Christmas Island

Party of Fleet, Cronin, Harrington, Wepler, Harrington and Mage went out to Xmas upon about 7:00 p.m. for banding and blood collecting.

ca. 60 blood samples of Phoenix Is Petrel and Christmas Is. Shearwater taken. Ca. 650 bands put on P.I.P., C.I.S., and Wedgetail. 4 Phoenix Island Petrels taken for skins.

Most P.I.P. and C.I.S. just beginning to nest, a few birds with eggs. Wedgetails (all dark phase) with large chicks. Few frigates sp?, Red-foot Boobies and ^{common} noddies roosting in the Messerschmidia. Noddies and Fairy terns roosting in the palms.

Left the island ca. 0830. ^{SS} 3°40' N; 157°34' W

31 October

Left Christmas Island 0800.

Starts at-sea observations at 0833. Large number of species (18) due to the proximity of land (breeding area), but few flocks. Sooty terns were the most abundant species (89). An abundance of Red-foot Boobies (31), one collected by Capt. Vaull from the radar antennas.

November

2nd day out of Christmas Island

R 5°44' N; 157°32' W — 7°38' N; 157°22' W ^{SS}

Total birds 234 - practically all single sight-ings - total sightings 173. 63 Black-winged Petrel - apparently

R. D. Crossin
1965

Journal

55

^{SR}
5°44'N; 157°32'W — 4°38'N; 157°22'W

2nd day out X-mas to Oahu

1 Nov out migrating, many moving toward SW in fast, direct flight. Four birds collected: 1 JFP, 1 BWP, 1 PIP, 1 Leach's SP. A few mottled Petrels (7) still coming through, 1 Sooty / SB-Shearwater seen well-straggled. One Pintail Duck was observed at fair range winging toward SW.

^{SR}
9°35'N 157°24'W

(Heavy rain - no fix?)

3rd day out X-mas → Oahu

2 November Weather fairly clear all morning, rain squalls all afternoon, sea choppy. Many Juan Fernandez Petrels (37) and Black wing Petrel (50). All Sooty terns (119) in two flocks. Storm Petrel still showing (13). Wedge tailed now with ^{light} white phase more abundant (18 light - 9 dark). Total birds 288 - 146 shearpet 125 tern. Many immatures in Sooty tern flocks, 20 in one flock of 78.

4 day out X-mas to Oahu.

3 November JFP Petrel and Bl-wing Petrel still abundant. One of each collected this morning by 1000. Weather partially cloudy all morning. Two petrels collected - 1 BWP; 1 JFP, 3 flocks, 172 birds total. Except for occasional wedgetails, Juan Fernandez Petrels and Black-winged Petrels dominated the days observations. A few mottled Petrels (4) still moving through.

R. D. Crossin
1965

Journal

5 Nov.

Honolulu, Oahu

arrive 1100

R.S. Crossin
1965

Journal

1st day SIC 10
Honolulu south

15 November

Party of Crossin, Husted, Magee and DeLong left Honolulu aboard SHEARWATER at 1600. Few birds in the harbor complex. Total of 39 sightings — few Pterodroma hypoleuca, Pomarine Jaegers, Noddy Terns, and Wedgetails. Raining over Oahu, as it had been for last week.

2nd day SIC 10 160-24W 20-27N
102-02W 19-40N

16 November

Sea still rough, heavy swells. An abundance of Petrels — Black wing and Juan Fernandez. — a few Bonin Island. at least one Bonin seen with completely dark underwings. One Black-footed Albatross following ship all morning. Black-winged Petrels + Juan Fernandez Petrels abundant all day. Two small flocks of Sooty tern — mixed wedgetail Petrel flocks. One flock of ca. 15 jaegers white eyes flew over. De Long and I kept throwing 4 shot at them even though they were far off and one fell. Later Doyle shot one out of a pair. Two Leach's Storm Petrels collected. 7 birds total.

Sea rough all day. Scattered rain & squalls all afternoon, few flocks.

R.S. Crossin
1965

Journal

3rd day SIC 10. 18-52N; 164-08W — 18-11N; 166-00W

17 November

Sooty/Slenderbilled Shearwaters dominated the day's observations with ca. half of the 304 birds seen. Juan Fernandez Petrels common throughout the day (77) and Black-winged Petrels (23). 20 Storm Petrels throughout the day, probably all Leach's — two collected. The S-Sb. Shearwaters certainly appear to be Sooty (Quercus). The Silver underwings appear to be predominant on all birds in close. Only 10 Sooty terns scattered sightings.

Nocturnal observations yielded very little — total 20 birds 6-8 hrs.

Two Black-footed Albatrosses followed ship all day & finally gave up at dusk. The sea was extremely calm most of the day — not a ripple, but downwind-lapping swell.

18 November

4th day SIC 10 17-09N; 168-11W — Johnston Is.

Few birds (287 total) 1 flock w/100 Sooty Terns. Sooty/Sb shearwaters 87. Juan Fernandez + Black-wing Petrels still common JF 59-DW 18. Arrived at Johnston Atoll at 1500 — closed observations until 1800 sunset. noc. obs. run until midnight — 4 birds.

R. S. Crossin
1965

Journal

STC 10

19 November
→ noon

1st day S Johnston 15-53N; 171-11W - 14-15N; 171-50^W

Sea fairly calm, clear and sunny, scattered mackerel scale clouds. Very few birds, few sooty/slender billed shearwaters, few Juan Fernandez Petrels. NO Sooty Terns. Tried the 10 gauge out today - shoots well but as yet have not had enough chance to test the range. Doyle went out in the skiff w/ the new Merc 20. Runs rings around the shearwaters. Collected 2 birds - 1 JT Petrel and 1 Leach's Storm Petrel.

afternoon

Skiff went out again - collected 1 BFB, 1 JFP and 4 Slender-billed Shearwaters. Sooty/slender bills made up 77% of day's total. Total = 652. Only one flock of Sooty Tern late in P.M. 100 birds towering very high (ca 1 mi up) with one Fry.

Although 4 slender-bills were collected, it is certain that "silver-winged" Sooty Shearwaters are being seen. The two species are still migrating together. Sooty terns may be mainly up in the air and thus being missed. All 4 slender-bills were young birds by gonads (none enlarged) thus this portion of migration is probably young birds which would not breed this season. New Merc engine is really working - plus Willie Talbot's for guiding shift to wind

R. S. Crossin
1965

Journal

STC 10

20 November

2nd day S Johnston 172-37W; 12-03N - 173-08W; 10-32^N

Relatively few birds and few species represented. 1 flock of Sooty Terns (100) made up practically all terns seen (100). Sooty/slender billed Shearwaters scattered throughout the day's observations (106) - one slender-billed collected from Shearwater. Two other RTTB and 1 TFPetrel collected. Did not get aiff in today as few birds and sea quite choppy - also must conserve fuel for grid operations - few terns seen vanished before ship could approach into flock.

Many of the Sooty-slender bills have been moving to SE. All these moving through now are probably stragglers which will not breed - probably last year's birds. The ♀ skinned out yesterday had very small gonads; but still very fat, although one apparently had scaten enroute - stomach full.

21 November

3rd day S Johnston 8-30N; 173-52W - 6-41N; 174-35W

172 birds total mainly Sooty/slender-billed Shearwaters (101). Only one small (12) wandering flock of Sooty Tern.

Juan Fernandez + Black-winged Petrels still common (17) + (4) Wedge tails all dark - 1 collected. One Tahiti Petrel and one Kermadec Petrel seen.

A. S. Brown
1965

Journal

22 November

4-52N; 175-07 W — 3-30N; 175-22 W

Birds fairly abundant (414 total).
Species well represented (15).
Sooty terns accounted for approximately half of the total (189). There were largely contained in numerous small flocks throughout the day. Sooty/Slender-bills still moving through in small numbers (total 47) - one slender-bill collected. Juan Fernandez Petrel still showing - much farther south than last month, perhaps southward migration is now in process or feeding area has moved south. Few Phoenix Petrels and a comparatively abundance of Christmas Island Shearwaters (21).

Nocturnal observations were held all night - few birds (total of 23).

Day coming into Howland (Southern part)

23 November

Very few birds on of Howland. A total of 24, 8 of these Sooty/slender-billed Shearwaters.

A. S. Brown
1965

Journal

22 November

Howland Island, Pacific Ocean
Arrived 1400 - set up camp. Party of Hunted + Mage went down Northwest beach and Party of Crossin + DeTory went around Southwest beach. Count of 20 Solden Plover, 1 Bristle-thighed Curlew.

The Red-foot Booby colony in the dead Cardia grove contained the following:

no eggs, 1 new nest being built
1/4 grown chicks - 3
3/4 " " 3
nearly fledged - 1

night check: 150 ad. + flying imm.

A few Greater Frigatebird imm. were still on the ground in the dead Cardia colony, these were generally emaciated. A maximum of 50 flying overhead, mostly immatures. A few (<5) Lesser Frigates were seen. 3 immatures were noted in the old nesting colony on S. point.

Blue-faced Boobies:

Both afternoon round of the island and all night survey of clubs around the entire island produced following data:

nests with eggs - 8
1/2 grown chicks - 1
nearly grown chicks - 1

R. S. Crossin
1965

Journal
Howland Island

23 Nov cont.

Blue faced Booby cont.
Clubs of up to 100, ^{birds} were found. Large clubs were encountered on the NE and SE beaches. An estimated 1000 birds are roosting on the island. One nest w/ eggs was found on the NW beach. Since all blue streamers were put on either in Sept 65 or Oct 65, attempts were made to capture only un-streamered birds for return readings. 119 returns were recorded, 2 red-painted Baker birds were noted. 14 (ad + imm.) were ^{+ streamer} banded. Larger clubs were generally spooky, smaller ones were pretty thoroughly covered.

Brown Booby

Estimated 40-50 birds were noted, 3 returns were recorded and 6 were banded + streamered.

nests w/ eggs ~~4~~ 9

1/2 grown chicks 1

3/4 " " 1

Browns were mixed in with blue facer in clubs.

Sooty tern

about 100 were noted off shore as we came up to the island in the afternoon. Possibly 100-200 were

R. S. Crossin
1965

Journal

110

23 Nov. cont.

Howland Island ^{sooty tern} cont
Heard over the island throughout the all night survey. None were ever seen landing.

No other species were noted.

Howland Island

24 November

Berlese samples were taken today. 13 samples total were taken, 9 of Brown Booby, 4 of Red-footed Booby. Shorebirds were in low numbers again today (only a few Golden Plovers). Collected 106 blood samples with accompanying streamering, banding and return noting when necessary on boobies. Broke camp at 0545 and left ca. 0630 ^(25 NOV) no trouble with surf on board ship ca. 0700 ^{25 NOV}

25 Nov.

Run from Howland to Baker practically devoid of birds as it was N of Howland. During 3 hrs of observations only 13 birds seen. Only 2 Sooty terns.

Baker Island

25 Nov.

Baker was green as was Howland. Vegetation all in good shape, flowering. Evidently rain has been quite abundant. The island proper was practically devoid of birds except for a few shorebirds - mainly Golden Plover. Along the rocky

Baker Island cont.

25 Nov. cont.

south and east shores, shorebirds were very abundant - mostly Luddy turnstones, few Golden Plovers, numerous wandering tattlers, few Prolia, one Brith-thighed Curlew. All Luddy turnstones that could be glassed were checked for bands - none seen. two specimens (unbanded) were collected. No red-rumped Aleutian birds were seen, although it is doubtful if the paint would still show.

One pair of Blue-faced Boobies had a full grown fledgling on the west side of the island near the lighthouse. approximately 300 Common Noddies were seen on the ~~low~~ coral bar in the center of the small lagoon on the east end of the island. These were just starting to settle down to nesting with 4-9 eggs present, mostly fresh from the clean appearance. One Brown Booby, ca 10 Sooty Terns, ca. 10 Hawaiian Noddies were seen over the island. mice were abundant, no cats seen. Landed at 11:30 - high surf, but caught it right and surfed in at the head of one swell at a very rapid speed (ca. 20 mph.) Raft then went back to ship - had no trouble getting out. We finished the survey

25 Nov. cont.

Baker Island cont.

at about 1530 and put out a flare for the ship - called the raft back in over Walkie-talkie and put out by 1600. The raft nearly was flipped when Wood + Kahn came into the island as a large (ca 10 ft) swell caught them and filled the boat before towing them out. Our first attempt out failed and we brought the raft back to shore and walked it down further south to near where the large vehicle is on the beach. we finally tried it out through the surf without a motor and made it with no difficulty. Surf was up to 10 ft. with little break except for un-determinable calms such as the one we went out on.

SR SS
0-40S; 175-00W - 1-36S; 175-56W

Southern Bird - 5 Baker Is.

26 Nov.

Very few birds (total 62) - rain most of the day. An oil slick was put out and worked from 0946 -> 1220 with very little results. Only a few storm petrels came to it - one Leach's collected. Apparently there are migrating as they show little interest on the slicks.

Juan Fernandez Petrel still showing as are Black-winged and (Bonin Is.)

1965

SR

SS

Southern Grid. 0-40S; 175-00W — 1-36S; 175-56W

26 Nov. Cont.

Ran nocturnal observations all night. Had one period during the night when heavy rain squalls were moving over. We stopped the ship and was able to collect 3 Sooty terns and 3 Black-winged Petrels. Two other Sooty terns were collected, but we were unable to retrieve them. A total of 151 birds, nearly 3 times as many as during the day were recorded — Practically all 140 — Sooty terns.

28 Nov.

SR

SS

Southern Grid 0-54S; 176-06W — 0-04N; 175-10W

27 Nov.

Very few birds (164). Ran an oil slick from 0830 — 1100. Picked up 9 birds, 8 with the skiff, one Gray-backed tern from bow. Very few storm petrels came in, and they showed little interest in the slick put out. A Leach's and a Wilson's storm Petrel was collected from the skiff. Later on in the day Hunted collected a Heron's making all three species collected in one day. Sooty Terns were very few (25). All 4 species of terns (Sooty, Gray-backed, Common & Hawaiian Noddy) were collected while messing around with the oil slick. Sooty/slender-bills were the most numerous species (58), some with distinctly silver underwing. All night observations yielded only 8 birds seen.

1965

SR

SS

Southern Grid. 0-46N; 175-11W — 0-32S; 176-38W

Very few birds again today (147). Day's observations today again dominated by Sooty/slender-billed shearwaters (62) — nearly half of birds seen. Only 17 sooty tern, mostly single wandering birds. Storm Petrels apparently still migrating, small groups of up to 4 flying together — 21 total seen. Few wedgetails (20) all dark phase. NO FLOCKS.

Nocturnal observations yielded 82 birds — 11 collected. These mainly during squalls after midnight. 1 Leach's storm Petrel, 1 Hawaiian Noddy, and 9 Sooty terns. When birds are in an area of heavy squalls, they come into the ship's lights readily, but seldom come in close enough to be shot during periods of clear weather. Pickup still being done on lee side of ship and allowing the ship to drift down on the shot birds.

27 Nov.

SR

SS

Southern Grid 1-03S; 177-04W — 0-53S; 177-53W

Very few birds. Heavy rain practically all day — visibility poor — no chance for collecting. 43 of the 93 total were Sooty/slender-bills. Two small flocks.

Nocturnal observations yielded only 22 birds, half (11) of them Sooty Terns.

R.D. Crossin Journal
1965

^{SR}
Southern Grid 0-24N-176-30W - ^{SS} 1-07N; 175-59W

30 Nov. Birds increased somewhat today over the past few days. (Total 259). This was primarily the result of 2 flocks of mixed terns - shearwater. Sooty tern accounted for 155 (150 of them in the 2 flocks). A few Sooty / Slender bills still moving by (31). Put out oil slick for two hrs, but collected only 3 birds. Storm petrels may be migrating, but fat condition certainly does not agree. Most birds are have little to mod. fat.

Total night nocturnal observations yielded practically nothing - 7 birds, ~~total sightings~~, 4 of these just before sunrise on 1 Dec.

^{SR}
Southern Grid 1-29N; 175-42W - ^{SS} 1-37N; 176-32W

1 Dec. Low, low 59 birds today. Ran oil slick from before sunrise until 11:10. Collected 14 birds off slick: 6 Storm Petrels (Leach's), and 4 banded Bobbies (3F) + 1 Herald's Petrel, or at best this is as close to identifying it here in the field. It blew down the slick just about like a wedge tail - No tracks except 5 wandering sooty terns. Many storm petrels, but apparently they are all tracks! These fed quite actively on the oil slick, other birds appeared curious.

R.D. Crossin Journal
1965

Southern Grid 1-37N; 176-34W - 0-40N; 177-35W

2 Dec.

Put out an oil slick early a.m., but boat nearly capsized with heavy swell. Few birds - total today of 47. Sooty / slender bills most numerous bird w/ 13. BFB (6) 2 collected, both banded, one streamered also. Another blue streamer bird was seen about noon. If the birds come in out of the sun, there is no chance of seeing paint or streamer and it sometimes happens there is only a quick moment of collecting time - hence the blue streamer bird ^{collected} yesterday, and the one today. One Leach's Storm Petrel collected today. Apparently they are the abundant storm petrel here.

Observations held all night - only one shear-pet seen.

0-20N-177-39W - 1-25N; 177-40W

3 Dec.

Too rough to put out an oil slick at dawn. Swells increased all day. ca. 25-30 ft. at 1300. Very few birds - scattered storm petrels and Bulwer's Petrel. Now have at least two sightings of an all dark storm petrel. Appears smaller than Bulwer's, w/o the buffy wing coverts and with a more dancing storm petrel flight - Sooty S.P. ??

Southern Grid 0-20N; 177-39W - 1-25N; 177-40W

3 December

Very low numbers of birds (46 total) 19 of these storm petrels. Weather increasingly rougher as day went on. Swells up to 25-30 feet. One flock of 7 Storm Petrels. None started up but (northern most) leg of squid. No birds collected.

4 December

1st day N. Grid 2-02N; 177-30W - 3-24N; 176-12W

Rough weather all day, very heavy squalls, intermittent squalls. Only 24 birds seen all day - mainly Petrels, Shearwaters, 3 Sooty Tern. No Birds collected.

5 December

2nd day N Grid 4-51N; 174-53W - 6-03N; 173-40W

Very few birds until after 1200 noon. Heavy seas. At 1210 ran into a medium-sized flock actually feeding. One hour later ran into another small-medium flock of STs, FT and WT. Hundreds of thousands of fish were milling on the surface of the water over a broad front of about 600 yds. All birds were down on the H2O with the fish. 3 birds were collected. One half hour beyond the fish about 300-400 porpoise were moving along in a broad front, perhaps herding the fish.

3rd day N Grid 4-51N; 174-53W - 6-03N; 173-40W

5 Dec. cont.

one half hour later in much the same area, another enormous flock of birds (estimated at 150 ST, 200 WT few BWP + JFP + CES.) were milling on the H2O over a very large school of fish which churned the H2O up for many hundred yds in a broad front. The fish school split up into at least 2 segments and one portion of it was followed until nearly 1800. Most of the birds of course went over to the segment of the fish school which was unattended by the ship, 7 more birds were collected and at least 6 shot down and lost in the heavy seas coupled with very bad light. The Obis appeared to be feeding, yet none hit any of the crews lines which were put out every time we passed through the school. The fish were nearly always in sight during the nearly 5 hrs we trawled with Jam. At times they would sound, but quickly reappear, milling on the surface. Most of the birds attending the school would be right down on the H2O with the fish both Wedgetails and Sooty Terns.

6 December

3rd day N.S. Grid 7-12N; 172-09W - 8-29N; 170-53W
again encountered a few flocks of mixed tern - shearwater today, but no concentrations of fish come yesterday, and birds feeding very lightly. Two medium-sized flocks - mainly Sooty Tern.

Weather very rough, w/ ca. 20 ft. swells, wind ca. knots. We are heading into the sea and bow is taking water every 3 or 4th swell. Shooting very difficult and in fact dangerous. Bow is being thrown up and dropped with terrific impact. Only collected 3 birds - 1 Blue-faced Booby subad. Band # 568-72041, a Leach's Storm Petrel and an imm. Sooty Tern, the latter from a mixed feeding flock that we chased for 45 minutes with no other success.

7 December

4th day N.S. Grid 9-35N; 170-06W - 10-38N; 169-04W
Extremely rough weather, wind ca 25-30 knots, swells up to 20 ft. Intermittent heavy squalls, light drizzle, water over the bow all day long. A total of 10 birds seen.

8 December

5th day N.S. Grid 11-17N; 168-11W - 12-45N; 167-08W
Extremely rough weather, wind up to 30 knots, swells up to 20 ft. Intermittent heavy squalls + light drizzle. Visibility nil for periods up to 1/2 hour. A total of 17 birds. One flock 2 ST. & WT.

9 Dec.

6th day - Grid to Hono 13-45N; 166-06W - 14-51N; 164-57W
Sea rough, high winds, intermittent rains again today. Total Birds 16, few Wedgetails, few Petrels, 3 Sooty Terns.

10 Dec.

7th day S Grid to Hono 16-06N; 163-24W - 17-21N; 162-09W
weather mostly clear, med swells. Still few birds - total 20. NO Sooty Terns, few Wedgetails, 10 Juan Fernandez Petrels.

11 Dec.

8th day S Grid to Hono 18-48N; 160-32W - 20-04N 159-13W
mostly clear, rough seas, wind ca. 20 knots. Very few birds. Total 14, 4 Red-footed Boobies, few Petrels, no terns.

12 Dec.

Honolulu Hawaii
Arrived Hono at Hono 0730.

R. S. Crossin
1965

Phaethon rubricauda

July cruise - Grid area

9 July - This has been the most simple bird to collect so far this trip. The birds are invariably attracted to the ship, and will often make 3 or 4 passes about it, head out to sea-at times out of sight and then return to the ship for a few more passes. White-tails appear to be just as curious, but these have been in the minority so far this trip. The bill color of this species is highly variable and may be due to age, reproductive cycle or perhaps other factors such as time of the year or food. Certain individuals show an almost black bill, with little or no hint of red or orange. Usually only single individuals are seen, but occasionally 2 or even 3 may come about the ship. Often one is seen to dive from varying heights of 50 to 200 feet up into the water, presumably for fish. These dives are normally almost vertical the birds often remain sitting on the water after a dive for some minutes before taking flight. Both the white-necked Petrel (P.e.externa) have been observed in some numbers on this trip so far. The white-necked usually shows a very distinct white neck and nape at most any visible distance. These petrels are often seen in company with Bonin Is. or Cooks Petrels. They can usually be told from the Bonin or Cooks at any distance by their larger size and peculiar high sweeping arch made above the water at dose intervals. Hypsleveas will make an arch, but it is usually quick and not as high above the water as externa.

Laysan Hawaiian Is. Pacific Ocean -(Laysan Albatross)

18-21 July Practically all birds on the island (estimated 10,000) are birds of the year. A few adults were noted to come in to feed young birds - this occurred mainly at night. The young range greatly in size or actually weight. Many still have the heads, necks and breasts covered with brown down, while a good portion of the larger ones are difficult to tell from adult birds. The pinkish feet of the adults as opposed to the blackish-grayish feet of the young seems to be a good character for telling them apart. The orangish bill of the adults apparently may also be acquired by young birds during the final stages of their time on the island. Many of the young with heavy down are extremely ? and ~~xxx~~ hardly weigh a few pounds. This variation in weight is most apparent throughout the group - some of the young being very heavy - others weightless practically. Many of the larger, stronger birds are now practicing their flying - often landing out in the water where they apparently are able to take off from quite easily. Numerous birds can be seen on land fanning their wings, especially when the wind blows strongly.

The birds are distributed throughout the island, but often congregate in open spots in the fields or along the beach, many also on the shore of the lake in the daytime, but there more into the dense cover by night.

The snapping of their beaks when they are approached is indistinguishable from that noise made by Great horned Owls.

There must logically be a great number of these young which will never make it. Numerous young can be seen lying about the island in various stages of decomposition.

R. S. Crossin
1965

Laysan

- 7 August Less than 1,000 birds left. Most still appear healthy, although very reduced in weight. Very few newly dead individuals are to be found, so apparently most have at least left the island alive. One adult seen in the night by a chick.
- 8 August Two adults seen standing by chicks - daytime.
- 10 August One adult seen on the south end during the night.
- 18-21 July Black-footed Albatross - All Black-foot chicks are about equal in the size and weight ranges to those of the Laysan. A great many of the Black-feet are concentrated on the N end of the island along the beach. This is apparently the center of nesting. In comparing like stages of young, the black-feet appear to be slightly heavier and larger proportioned than the Laysans. Estimated number of Black-feet are about 4-5,000. No Black-feet adults were observed coming in to feed the chicks.
- 7 August Less than 50 individuals are now on the island. A number (ca. 25) carcasses were found on the north end of the island where the large concentrations were found in July. Those that remain are small, light individuals which do not appear to have the strength to even fly.
- 18-21 July Wedge-tailed Shearwaters - Next to the Sooty Tern, this is the most numerous bird on the island. The wedge-tails nest over most of the island and are not confined to specific colonial areas. They are to be found on the larger beaches, Scaevola stretches, within the tern colonies and around the lake in all types of cover.

The burrows may be up to about 3 feet deep, but most are not dug to this depth. Occasionally a bird will be seen incubating an egg in the open, but I believe these are birds which have had their burrows destroyed at about the time of egg laying and have chosen the handiest spot because those in the open usually have very fresh eggs, whereas all eggs checked in burrows were in varying stages of incubation.

In certain areas, especially in the grass tuft fields about the tern colonies, it is extremely difficult to walk, because the ground is so undermined with tunnels and ?? inconstantly as one moves about.

Estimated 100,000 birds on island.

- 7 Aug New estimate of between 150,000 and 200,000. Possibly up to 1/3 of the occupied burrows have newly-hatched chicks on piping eggs. Some new burrows are constantly being dug, but whether these birds will lay or not is unknown. Large clubs of up to a couple at night in open areas. In daytime large groups are found by the lagoon shore, but these increase at night.

Christmas Island Shearwater - Estimated 3,000 birds on island. Very few birds seen. Those that were seen were usually in Scaevola ? along the west beach. One pair was found with a full grown chick in a burrow within the Sooty tern colony on the east side of island in the grass clump field. This young was in a shallow burrow (about 1 ft. deep) and completely covered with fuzzy down (blackish). Another young about the same size was found crawling under dense Scaevola

R. S. Crossin
1965

Christmas I. Shearwater(contd)

bushes on the east side of the island. This bird was collected on 21 July.

The flight of this species is distinctly different from the wedge-tails. The straight-held rounded wings differ markedly from wedgies.

August 7 - Estimation still remains at 3,000 at least 30 burrows were found so far with large young. These dark young are as large or larger than the parents, but still down covered.

August 10- A banded bird (544-38003) was found with another mated bird which was not caught. A number of birds were found on the north end along the beach under the large boulders, some large chicks were noted here.

Bonin Island Petrel - Aug. 7 - About 20 birds sitting in grass or at burrow entrances. No indication of nesting. About 1 dozen dead individuals found - at least one of these freshly dead. Estimated population 50 - 100 birds on the nights of the 5 and 6 only a few individuals were seen.

August 8 Birds are increasing each night. 10 Aug - At least 10 birds seen by each of the members of the party during the nights banding. A few pairs seen by burrows.

" 11 Over 30 individuals seen by me during the nights banding. Comparable numbers seen by other members of the crew. Considerably more pairs are now being seen. Husted and I observed one individual digging a burrow in the grass cover on west side. A few others were noted digging by other people.

Bulwer's Petrel - Laysan

18-21 July On the first night on the island I discovered a pair of adults at the burrow; one outside, the other within. A chick estimated to be no more than a few days old was found within the burrow about 12" deep under a large tuft of grass in mixed grass-Scaevola cover at W side of island.

Occasionally I found a single bird sitting quietly in clearings in the Scaevola cover. In the evening birds often were seen flying back and forth over Scaevola apparently attempting to locate their nest site. I believe the birds are not adept at locating the nest sites and may make 30-40 passes before finally zoning in. As a bird flies over the area near the nest site it moves very slowly and hesitatingly and once past the immediate area appears to recognize unfamiliar ground and immediately speeds up, takes a new swing around and repeats the process.

A pair of birds were collected from a burrow on the 21 July. One of these was banded.

Estimated population = 2,000 birds.

7 August Estimated population at least 2,000 birds. Many singles or pairs sitting by burrows, but the burrows are invariably empty. A few chicks are found. These small, down covered.

Red-tailed Tropicbird - Laysan

18-21 July Estimated population = 3,000 birds. The red-tails nest primarily, if not exclusively under Scaevola frutescens and generally only where

R. S. Crossin
1965

Red-tailed Tropicbird

18-21 July (cont.)

this was quite dense. A few birds were found with partially - well incubated eggs but the majority had chicks of varying sizes up to adult size.

The nests are deep shallowed out places in the sand, usually under dense branch formations of the Scaevola. Leavs and other litter usually appear in nests, but this appears accidental and not brought in by the parent birds. In places nests are only a few feet from each other. One egg per clutch.

7 August - No change in numbers, most birds on nests had chicks of various stages - no eggs found.

11 Aug. - Eggs of all stages of incubation found, and chicks of all stages. A few immatures with the flying population

Blue-faced Booby - Laysan

18-21 July Ground nester, all with large young. In no case did I observe more than one young - although at Lisianski 14-17 a few pair still had heavily incubated eggs or an egg and nearly hatched chick. Apparently 2 eggs may be a normal clutch, but only one of the set ever hatches.

Invariably the young bird is attended by one parent.

At Lisianski the few birds still in mid-nesting stages showed no evidence of a nest being constructed to hold the egg - rather a shallowed out area on bare ground. Estimated population = 1,000 birds.

7 August No change - numbers of breeding.

9 August One adult blueface observed incubating a dried-up albatross egg - probably Laysan Albatross. Egg in a scrape on the west shore of lagoon. Many other rotten albatross eggs about.

Brown Booby - Laysan

18-21 July On the night of the 20th approximately 6 pr were encountered in dense Scaevola while searching for Laysan Albatross chicks. I did not at that time have the means to check the nesting very closely, but 3 nests were noted - 2 contained 2 eggs each, the toether contained one small young. The two sets of eggs appeared very dirty and enst soiled and probably were of advanced incubation. A substantial nest of sticks and grasses was constructed on the ground in each case. No other birds were seen during the visit.

On Lisianski a small colony of about the same size was noted, but all chicks were running about and nearly full-grown. Estimated population on Laysan = 300.

7 August Estimated population between 50 and 100 individuals: 2 nests with 3 eggs each noted and one nest with 2 chicks. Several half-grown chicks about west shore.

R. S. Crossin
1965

Laysan

Red-footed Booby

- 18-21 July Estimated population = 1300 birds. This species builds a frail nest of sticks, usually on Scaevola bushes, but occasionally other shrubby type plants are used. All nest observed contained young from large still down covered to nearly fully-feathered individuals.
- 7 August No change from July.

Frigatebird

- 18-21 July Nesting season well along all nests with young ranging from a few still covered with white down to adult-size birds. All nests observed were of sticks forming a shallow platform in Scaevola frutescens bushes. Apparently only one young nest. Estimated population = 5,000 birds. The adult ♂ often seen on the nest shading the young, both morning hours and P.M. so shifts probably vary with each pair.
- 7 August No change in numbers, young larger as expected.
- 11 August Possibly numbers are up this month - this probably due to more immatures in the air.

Laysan Teal

- 18-21 July On the night of the 17th just after landing we started banding Sooty Terns on the west side of the island. I captured one individual of this species which had been wandering about in the Scaevola - grass tern colony. This was some distance from the lake. On another occasion one individual was flushed from the dense tangle formed by the con ? plant which surrounds the lake. Estimated population = < 200 birds.
- 7 August 6 adults, 2 ducklings about 3/4 grown seen so far.
- 9 August After banding until dawn, we came back to Camp and observed an adult ♂ feeding in the surf on the west shore. The bird would run down the beach as the tide went out and grab up crustaceans or some small animal life, then the tide would swoop in and carry the bird up the beach - then the feeding would be resumed. Two birds (adults) seen along the ease shore of the lagoon. One flew west over the heavily vegetated belt surrounding the lagoon and was chased for about 100 yds by a common noddy tern.

In the afternoon the entire crew of 5 went into the area on the east shore of the lagoon banding Red-footed Boobies. With all the tramping around, no teals were flushed. Two were seen on the shore of the lagoon in late afternoon and right at dusk Ken saw two which may or may not have been different birds. Jeff caught one banded bird way over on the south end of island by the rail-road track (band No. 615-30603). This may be the clue to the problem - they may be scattered at random - over a good portion

R. S. Crossin

1966

Honolulu to 20-34N-158-05W

January 24 - From 1015 to 1400 we stayed within a few miles of port checking compasses on the ship. Left Harbour Complex in Honolulu at 1400 with crew of 9 Smithsonian team aboard. Max Thompson (charge of Islands), Dayle Husted, Bob DeLong, Jeff Tordoff, Jim Lewis, Norman Heryford, Brian Harrington, and Frank Smith. A few Brown Boobies and Red-footed Boobies around the harbour, in one case a feeding flock of 12.

After getting out of the harbour, a Black-footed Albatross started following the ship and soon we started picking up Pomarine Jaegers. Up to 11 were sighted at one time. The birds would fly ahead of the ship and land on the H₂O, picking up and taking off as the ship approached. I collected two and Thompson and Smith collected two for a small series of 4. When a bird was shot down, all others from around the area would rush in and hover over the downed birds. No doubt the hit bird resembled one diving for food. Most were light phase, but a few were intermediates, and one or two dark phase birds. One small flock of 26 Sooty Terns were noted, being "attended" by 5 Pomarine Jaegers.

January 25 - 2nd day S. Oahu, 18°45'N-159°29'W - 17.03N; 160-37W

Sooty Terns often in pairs - no one definite direction, also 140 (40,100) in two separate feeding flocks.

One Black-footed Albatross followed ship all day and a Laysan Albatross followed from 0815 - 1021. A total of 10 Red-footed Boobies, few Fairy Terns (6 in one large mixed feeding flock) and few Wt tropicbirds and one wedge-tail. Sea rough.

January 26 - 15-08N; 161-52W - 13-28N; 163-00W

Total of 91 birds, few small flocks w/ Sooty Terns. Abundance (10) of White-tailed Tropicbirds. Ordinary day away from land during January. Sooty Terns were abundant through the night from 2030 on. No special direction - not to NE.

January 27 - 1-36N; 164-12W - 10-08N; 165-20W

An abundance of Kermadec Petrels today (10). One apparently a Kermades, with pure white head. Juan Fernandez abundant today (24). Few Sooty Terns (59) mainly in two flocks. First dark-phase Wedge-tail sighted today.

January 27-28 - 10-08N; 165-20W - 11-13N; 167-14W

Nocturnal. The seas were so rough all night that watches could not be held on the bow. Jeff nearly got knocked over the side, so all the rest of the watches were held on the bridge or flying bridge. The noise, however, from the engines almost drowns out any Sooty Tern calls and so the few terns seen may not be indicative of the number passing over. The ship is in constant roll with no one getting sleep and ships crew continually asking the question "Is it absolutely necessary to make this run?".

January 28 - 11-13N; 167-14W - 12-01N; 168-15W

Very few birds (57). Kermadec Petrels still in number = 8. Terns practically non-existent comparably = 8. Juan Fernandes Petrels still numerous = 20, few

white necks = 4.

At 1704 a flock of 12 Petrels and 2 Sooty Terns were seen very close to ship, but weather would not permit shooting from the bow. Petrels composed of 3 Kermadecs, 2 White necks and 7 Juan Fernandez - all in tight knit group with the 2 Sooty Terns overhead. Weather still very rough on NW run. Ship rolling so bad that the captain changed course after the freezer compartment sprung open and spilled contents all over, lumber shifted on decks, fire extinguisher broke lose from the hull and filled same in SI crew quarters - every one getting banged around a bit with up to 40° rolls. Bow constantly awash - no shooting.

January 28-29 - 12-01N; 168-15W - 12-23N; 170-08W

Changed course to favorable seas and most nocturnal held from bow where Sooty Terns could be heard. Total of 64 birds recorded - mostly Sooty Terns = 60. Most terns were headed (when direction was detectable), N or NE which would put them into Johnston Atoll far to the N-NE of our night position.

January 29 - 12-23N; 170-08N - 13-24N; 171-31W

Only scattered sightings today - 24 birds total. Rough weather. Held night watches again all night, slightly higher number (34) on nocturnal, mainly all Sooty Terns.

January 30 - 14-48N; 172-24W - 15-49N; 171-03W

Another practically birdless day - total of 19. No Sooty Terns today. Nocturnal yielded 149 birds, mainly Sooty Terns = 130. Tordoff dropped 2 Red-foot Boobies by letting them get over the deck before firing, and having them drop on deck. The night before the Captain shot at one setting on the radio wire and dropped both Booby and insulator with the 30 cal. carbine. One of the two Red-foots collected was banded - French Frigate Shoals, an immature bird.

January 31 - Johnston Atoll - 16-21N; 169-41W

Birds picked up tremendously as we approached the atoll - 358 birds, mainly Sooty Terns (284) and boobies. Spent most of the day at Johnston fixing leaks in the pipes in the engine room. Ken Amerman says there are roughly 100,000 terns on Sand and they are just beginning to lay. Night watches south of Johnston Atoll were held continuously, Sooty Terns common throughout the night, as were Red-footed Boobies.

February 1 - 14-22N; 170-48W - 12-31; 171-49W

Ran completely out of birds today - a grand total of 25, 10 of these Sooty Terns. Night watches likewise were producing nothing so we discontinued these at 2130.

February 2 - 10-30N; 172-50W - 8-36N; 173-42W

Day practically birdless until about 1630 when we started picking up a few feeding flocks of Sooty Terns. Area here evidently rich in food as these are the first feeding flocks we have seen in some days.

R.S. Crossin
1966

SIC 11

Howland
Baker

February 3 - 6-31N; 174-18W - 5-05N; 175-00W

Collected a Puffinus puffinus early in the morning, and saw several more throughout the day. These do not appear to be typical Newell's, possibly are P. p. opisthomelas from Baja California. Many White-rumped Storm Petrels throughout the day - collected 3 Leach's and saw 48 other unidentified. Christmas Island Shearwaters common. At 1502 saw first large flocks of about 35 Sooty Terns and shear pet and throughout the rest of the afternoon large flocks of up to 325 birds seen. Mostly Sooty Tern and dark Wedge-tails with a sprinkling of Christmas Islands, Juan Fernandez Petrels and Storm Petrels intermixed. Fish (probably tuna) were noted jumping during chasing some of the large flocks. A new evidently very rich feeding waters to attract so many birds as the area to the north has been especially devoid of most every species. A total of 13 birds collected = (6 Wedgetails [5 darks, 1 intermediate with mottled barring on flanks and breast], 2 Sooty Terns [1 ad, 1 imm] 1 Puffinus puffinus; 3 Leach's Storm Petrels, and 1 Bulwers Petrel. Total of 927 birds recorded for the day; 802 of these in flocks (10).

At least 3 Sooty Terns noted between immature and adult plumage. This could be a once-over molt and thus relatively few would be noticed unless one was in the area where the sub-adult birds are when undergoing molt.

February 4 - 3-07N; 175-49W; - 1-53N; 176-26W

Total birds 367, mainly Sooty Terns. 302 birds were encountered in one feeding flock. Otherwise sightings were irregular. The ship has been on the blink since early morning with a leaking, actually gushing oil line to one engine and so we are running on single engine. Most collecting was done today with the skiff operating out from the ship.

Held all night watches, but only encountered a total of 8 birds.

Between Howland and Baker and west to 0-27N; 176-52W.

February 5 - Total of 101 birds today, primarily terns with a few boobies of all 3 species. Upon landing at Howland shortly after 0700 an estimated 75 Sooty Terns were noted over Howland. Max informed me by radio that 1-5000 were over the island during late afternoon and night which looks like a breeding colony shaping up. All night observations held on board Shearwater. Terns (actually only a few) most numerous when we doubled back east and passed within a mile off Howland at 11-1200 P.M.

February 6 - 1-02N; 176-03W - 1-01N; 175-18.5W

Ran one eastern leg of the Grid while the people were on the Islands. Running all day again (since early morn of the 4th) on one engine, oil leak. Few birds - total = 66. Nocturnal yielded 79, mainly Sooty Terns.

February 7 - 0-11N; 176-29W - 1-06N; 177-05W

Starboard engine still out with oil line leak. Picked up DeLong and Lewis on Baker, we had difficulty getting out with the surf and broke the case around drive shaft on one of the new Merc engines. Birds more numerous today, an abundance of

R.S. Crossin
1966

SIC 11

small flocks of Sooty Terns. Also many White-rumped Storm Petrels, 3 Leach's collected, so one might assume that most are Leachs, 24 others sorted.

Left Baker at 0720, departed Howland at 1400.

All night watch enroute to NW of Grid equaled total of 54 birds, mostly Sooty Terns, but scattering of 8 species.

February 8 - 1-17N; 178-14W - 1-12N; 177-45W

Very slow day bird wise - only 35 birds seen, scattered sightings of White-rumped Storm Petrels, 1 Leach's collected, terns, boobies. Finally got two engines running at 1600 - one has been out since early on 4th.

Total of 10 birds seen during nocturnal observations.

February 9 - 176-35W; 1-40N - 0-18N; 177-48W

Number of birds increased considerably over yesterday = 228 - thus mainly on account of 6 flocks (155). Sooty Terns most numerous (181) and Storm Petrels (White-rumped) 31. Five of these latter were Leach's (collected). Few birds at night = 21.

February 10 - 0-19S; 177-27W - 0-02N; 176-41W

Sea very rough today with up to 10 ft. swells and wind up to 30 knots. Visibility poor and very few birds about - total = 27. 11 of these were White-rumped Storm Petrels. Shore birds were seen at night = 41, 36 of these were Sooty Terns.

February 11 - 0-38S; 177-01W - 1-00S; 176-09W

Low numbers again today - 31 total, 20 of these White-rumped Storm Petrels. Night watches were held until 1200 midnight. A total of 7 birds.

February 12 - 2-09S; 174-58W - 3-20S; 173-35W

Birds numbers picked up tremendously today. After 1600 flocks composed of Sooty Terns, Fairy Terns and Gray-backed Terns, with a sprinkling of Shear-pet. started showing up. Most of these were feeding flocks. Total birds 329 (294 in flocks). These are quite likely from populations in the Phoenix Group. Passed McKean after sunset. Due in Hull ca. 0730 tomorrow morning.

Hull Island

February 13 - Departed Shearwater at 0800 for survey of Hull Island. Max took one raft and complement of men and I took another. Max covered south side and I covered NW side - the two rafts meeting at the village on W end of island.

R.S. Crossin
1966

SIC 11

Experienced no great difficulty coming in or out of the lagoon. Very few Sooty Terns were encountered on NW side of island - a scattered few flying high over head. Max encountered one swirl and collected 3 - one of which possessed a broad patch and so nesting may soon commence. The following estimates are concerned with my portion of the survey (NW side within the lagoon: White-tailed Tropicbird - only one individual with an exceptionally long tail was seen flying over the coconut palm grove surrounding the village. Brown Booby - scattered individuals were seen over the lagoon and taking off from the small islets along NW shore. Estimated 150 birds seen, mostly adults. Frigate birds - Frigatebirds were abundant over the lagoon, and perched on the taller vegetation along the islets - appeared to be Greater although no ad. ♂ were seen so species must be regarded as belonging to either Lesser or Greater. Estimated 200 seen. Golden Plover - three individuals were seen along the lagoon shore. Ruddy Turnstone - one individual was seen at the cove on the N landing area and one other along the lagoon shore on NW side. Wandering Tattler - one was collected at the cove on N landing channel and approximately 10 more were seen, mostly single birds, along NW lagoon shore. Bristle-thighed Curlew - one individual was sighted flying over the lagoon near the village on W tip. Sooty Terns - estimated 200 individuals were observed flying, usually in small groups, over lagoon on NW area. Gray-backed Tern - abundant on NW side, numbers seen continuously over lagoon and NW islets. A colony of roughly 1000 birds flew up from the 3 small islet W of landing channel. A stop was made, but no evidence of nesting was present. Smaller group of up to 100 flew up from other islets toward village. Estimated 2000 birds were scattered over NW portion of island. Common Noddy Tern - small numbers of birds were seen rising from every islet from N landing area up to the dense coconut palms area near village. An estimated 500 birds were seen along this NW shore of the lagoon and out over the lagoon. Hawaiian Noddy Tern - an estimated 50 birds were seen along the NW islet, but larger numbers were observed leaving the island during early morning. Fairy Tern - scattered individuals were seen all along NW side (flying), but numbers were greatest in the coconut palms grove about the village, where the birds were noted alighting in the palms. Estimated 150 birds seen - mostly about the village. Crested Tern - Two were seen over the open ocean before passing into the lagoon and 5 were noted on a sand bar on the NW lagoon shore. Hawaiian Noddy Tern - an estimated 50 birds were seen along the NW islets, but larger numbers were observed leaving the island during early morning. New Zealand Cuckoo - one collected by Max near the lagoon side of village as it progressed through the coconut palms.

February 13 - 4-27S-172-14W - 3-48S; 171-42W

At 1630 one of the oilers cut his finger off in the compressor belt and ship changed course from en route to Phoenix instead to Canton Island. Arrived Canton ca. 0100.

Canton Island

February 14

Took Jeff back onto Canton at 0300 to be shipped off to Honolulu as his throat is no better and he is quite concerned. Came back to ship after seeing Jeff aboard an Air Force Rescue Plane. Appeared to be about 2000+ Gray-backed Terns on the small island E of the channel, 25+ Hawaiian Noddies seen flying

R.S. Crossin
1966

SIC 11

2/14/66
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over the lagoon at day break and 3 Bristle-thighed Curlews and 5+ Wandering Tattlers were also seen along lagoon shore early in the morning. Departed Canton at 0818.

Enderbury Island

February 14 - Arrive Enderbury 1330. Landing good, most of crew went off on survey, Bob DeLong and I spent afternoon tearing off old roof on house in preparation for putting on new green plastic roofing. Roof finished by evening. Spent early part of evening taking blood samples of Blue-faced Boobies on SW end of island. Party then ~~spent~~^{split} to band frigates on NW end of island near the guano pile and Red-foot Boobies on SE end.

Island is quite green and evidently has had recent rains. Sida is luxurious and blooming - present in varying densities over most of the vegetated area of the island.

February 15 - Made a shore bird count in the morning and entire crew worked the frigate colony for banding and blood samples at night. Left the island at 0610 on 16 Feb.

Shearwaters and Petrels

None present on the island. Max noticed what he thought to be an Audubon's Shearwater off the SW end on morning of 16 Feb.

Red-tailed Tropicbird

About 5 birds were displaying near the light house when we first arrived on afternoon of 14. There were very few in evidence after this time. One adult with a 1/3 grown chick was present next to the wall of the torn down building by the bomb shelter. This was the only nest that I had occasion to see.

Blue-faced Booby

One club of about 150 birds formed behind the house on night of 14, but had dispersed considerably by night of 15. Two other clubs were formed on night of 14 across the lagoon from house - there appeared to have roughly 100 birds each. Pairs and single birds were scattered irregularly over most of the island. A few pairs had large young. I would estimate that not over 600 birds were utilizing the island.

Brown Booby

These were present in thick scattered pairs over most of the vegetated part of the island. I noted less than a dozen nests on the west side of island, and suspect the E side was fairly comparable. A few chicks of varying sizes up to 3/4 grown were present, but most nests contained incubated eggs - all sets of two. Estimated 100 birds on the island.

Red-footed Booby

This species was present in 3 different concentrations. One on the SE side

of the lagoon - worked by Thompson. Another concentration was present in the Messerschmidtia grove on W side of lagoon mixed in with the Greater Frigate colony. An estimated 450 birds were present here. Only about 25 pairs had nests, practically all with eggs. A third small concentration was present further up the next beach in the Cordia grove by the guano pile. Less than 100 birds were here and approximately 12 nests with eggs were present. One nest contained a 1/3 grown chick - dead.

Great Frigatebird

Concentrated primarily in one colony on W west side of island in the Messerschmidtia grove. I estimated 5000 in this colony on eve of 14, but this may have been too high. As numbers were certainly not this great on night of 14 during banding operations. The island population is apparently somewhere between 3 and 4000 birds at this time. About 2/3 of the population appear to be immature birds (flying). Most adults are now starting a new nesting cycle - displaying and carrying nesting material. Approximately 75 nests were present in the main colony, about 50 with fresh eggs to slight incubation. One egg was hatching on night of 14 and one dead chick was noted (about 1/3 grown). All nests in the colony were built in the Messerschmidtia bushes. 9 nests were present on the south end of the island - these built on Sida clumps only a few inches from the ground. All contained fresh eggs.

Lesser Frigate

Approximately 300 flying immatures were present, scattered about the W end of the Greater Frigate colony. These were scattered about roosting mainly on the ground or in low vegetation. About 3 adults were noted on night of 14 and 2 or 3 on night of 15. One ♂ had the throat pouch enlarged so apparently a few are about to begin a new nesting cycle.

Golden Plover

Distributed thinly over the island, with concentrations on the E shore. A total of 544 count.

Ruddy Turnstone

Found most commonly along the lagoon and shore lines, but small flocks and singles were noted over most of the island. Count of 627 on 15 Feb.

Wandering Tattler

Thinly distributed over the island - count of 74 on 15 Feb.

Bristle-thighed Curlew

Thinly distributed over entire island. Count of 35 made on 15 Feb.

Sooty Tern

Swirls of up to 5000 were noted just behind the light house on evenings of 14 and 15 Feb. About 200 more noted sitting on the west shore of the lagoon

with Gray-backed Terns on 15 Feb. These were not as yet with eggs.

Gray-backed Tern

Estimated 2000 birds, mainly confined to the lagoon shore area. Two nests with eggs were found on the 14 Feb.

Common Noddy Tern

An estimated 100 were observed on the island mainly about lagoon and on the south end. No nesting was in progress.

Hawaiian Noddy Tern

Estimated 500 were roosting in the Cordia grove on the NW side of island. Old nests were present, but no current nesting was in progress.

Blue-gray Noddy Terns

Two birds were noted on the west side of island.

Fairy Tern

Only two individuals were noted.

Pintail Duck

Three were seen on the northern most pond in the center of the island. All appeared to be females.

February 16 - Enderbury to 5-22S; 171-08W

Total birds 155, mainly Sooty Terns and dark wedgetails.

February 17 - 7-31S; 170-55W - 9-33S; 171-03W

Birds relatively scarce until mid afternoon when flocks of Sooty Tern, huge numbers of Fairy Terns and Common Noddy Terns started showing up. Total numbers of birds = 434, 394 of these in 9 flocks during late afternoon. Shear-pets still in the minority with only 10 sightings for the day.

February 18

Swains Island

Arrived at Swains Island before daybreak. The entire SI party went ashore at dawn and surveyed the island. Most of the village was flattened by ca. 100 ft. tidal wave which smashed over the island. The vegetation was most harmed at the SW beach. A Mr. Jennings owns the island or more likely in conjunction with a brother and sister who do not live on the island. Ownership has apparently been in the Jennings family since 1814 when the original Jennings settled there. The present owner had been in the Air Force and attended the Univ. of Arizona in 1953. He is presently in his mid-30's. We had a short chat about local items about Arizona and Mexico, all of which he clearly remembered.

The island is very densely vegetated, primarily coconut palms, interspersed with broad leaf evergreen. Orchids and other epiphytes are very dense on most of the trees and testifies to the abundant rain which the island must receive.

Birds - Golden Plover - scattered throughout the island, and strangely, found in the most dense vegetation. At least 20 were noted by myself. One was collected.

Sanderling - DeLong collected one on the south beach. No others were seen.

Common Noddy Tern - extremely abundant over the entire island the birds nest commonly in the coconut palms and many were seen carrying nest material to sites. Also many young were noted being fed by adults on the palm fronds. 5 specimens collected. Estimated 20,000 on island.

Hawaiian Noddy Tern - scarce - only three individuals seen. One collected may be more common than this first survey showed.

Fairy Tern - extremely abundant over the whole island. This species was noted perching in all types of vegetation. Estimated 30-40,000.

New Zealand Cuckoo - about 10 birds were seen and more heard - none was collected.

In addition to the above - Red-footed Boobies were seen off shore; and the natives claim that a large pigeon, probably Ducula pacifica is found. About five of us are fairly certain that the Black-naped Tern was seen from the ship along the beach just at sunrise.

Pago Pago, American Samoa

February 19 - Very few birds, Upon arriving near islands yesterday - total of 61. Arrived in harbor this morning before daybreak. Max and I make connections to go to West Samoa.

Western Samoa - Took the 1730 Polynesian Airline flight out from Pago Airport and arrived about 1815 on island on Upolu, Western Samoa. The airport is roughly 20 miles from the main town, Apia, and a rickety old wooden bus makes the haul along a narrow hardtop road. Plane fare over was \$26.60 round trip. We stayed at the Aggie Gray Hotel at \$10. a day. Rainy seasons is on and rain fell in torrents most of the night.

February 20 - Made connections with a Mr. Gray at the hotel to send a boy off into the country to get a car - a Datsun - which is the only available rental car in Apia - at \$15 per day. It rained the entire day, mostly in torrents and we decided to leave on the late afternoon flight back to Pago. Our trip up the mountain in the rent car was halted by an enormous tree which had blown across the road just at the beginning of good clove forest above the seismograph stations. Area to this point is rather heavily settled.

R.S. Crossin
1966

SIC 11

February 20 -

Birds

Banded Rail (Rullus philippensis goodsoni) very abundant in dense vegetation from coast to cloud forest. The birds can disappear in a flash in the under growth. Encountered all along the road to the seismograph tower and above. A few individuals seen in an open pasture were noted to run to cover with alarming speed.

White-throated Pigeon? (Columba vitiensis) one individual of this species was probably noted just below the seismograph station at the edge of heavy rain forest.

White-rumped Swiftlet (Collocalia spodygia) common throughout the area from coastal to cloud forest. The birds feed butterfly like about large forest trees as well as out over the open meadows.

White-collared Kingfisher (Halcyon chloris manuae) although Mayr credits us flat-billed kingfisher (H. reairvirostris) as the only kingfisher on Upolu it was definitely the White collared of manvae race which we were seeing abundantly. Usually perched on vegetation or on cures along the road.

Polynesian Triller (Lalage maculosa) very abundant from coastal to cloud forest in open country. Very numerous in open pastures below seismograph station.

Island Thrush (Turdus poliocephalus) common in dense forest from above apice to above seismograph station.

Samoan Fantail (Rhipidura nebulosa) very abundant in heavy forest and brush land near seismograph station.

Samoan Broadbill (Myiagia albiventris) a few were noted near the seismograph station in heavy forest or along the road.

Scarlet Robin (Petroica multicolor) very common near seismograph station in heavy forest. Squeak out into open easily.

Samoan Whistler (Pachycephala flavifrons) abundant in the heavy forest - cloud and rain, but difficult to approach.

Polynesian Starling (Aplonis tabirensis) only a few of these were seen in heavy forest near the seismograph station.

Samoan Starling (Aplonis atrifuscus) seen in small groups, visually lower down near the coast, scarce up high.

Mao (Gymnomyza samoensis) an adult and bob-tailed juvenile were seen below the seismograph station.

Wattled Honey-eater (Foulebraio carunculata) only a few seen along heavy rain forest below seismograph station.

Cardinal Honey-eater (Myzomela cardinalis) fairly common from coastal to heavy cloud forest.

Red-headed Parrot finch (Erythrura cyanovirens) only two seen, an adult ♂ and a juvenile ♂ collected near the seismograph station in grassy brushy fields.

In addition, the Red-vented Bulbul, (Pycnonotus cafes) was observed in Apia.

February 23 - Pago Pago, American Samoa, 13-16S; 170-47W

Leave Pago Pago at noon. Very numerous flocks of Fairy Terns and Common Noddy Terns all day. Total of 904 birds - mostly RFB, CNT and FT.-Shear-pets, except for a few dark Wedgetails, practically non-existent.

February 24 - Swains Is. 11-22S-171-10W - 10-06S-171-37W

Numbers dropped off, most birds around Swains Island - mostly Noddy Terns

R.S. Crossin
1966

24 February Swain's Island(cont.)

190, 20 Fairy terns. Total birds = 225. Only 3 Sooty Terns noted, none yesterday. A few dark Wedgetails - Shear-Pet almost non-existent.

8-155; 172-23W - - - 6-17S; 173-18W

25 February - Only 90 birds today. 71 of them Sooty terns, more variety showing up finally - few Petrels, few White-rumped Storm Petrels and pair of Jaegers. Only 2 flocks, both traveling, and both composed of purely sooty terns.

4-25 S; 174-17W - - - 2-37S; 175-23W

26 February - Numbers increased considerably today - 211 total. 100⁺ terns, many White-rumped Storm Petrels, and a few White-throated. Some of the White-throated were intermediate phase with just patches of white along flanks and a few were completely dark phase. Ran nocturnal from midnight to sunrise, only 2 birds.

27 February - Southern Grid-Baker to Howland. 0-52 S; 176-21W to How.
Birds very numerous about the islands. Total of 698 - 580 of them Sooty terns. Numerous small to medium - sized feeding and traveling flocks. Ca 5,000 Sooty terns swirling over Howland, but none on the ground as yet. About 15-20 were noted on the beach as we landed. 44 terns seen on all night observations.

28 February - ? NE Howland. 1-15 N; 175-26 W - 0-14 N; 176 - 30 W.

Numbers dropped off considerably away from the islands. 165 total - 100 terns, 42 storm Petrels, 11 Leach's collected so must assume that the vast majority of White-rumped Storm Petrels are Leach's. Few Terns upon reaching the islands and very few on Noc - ? - from Baker to Howland -

1 March - Howland Island - 1-20 N; 177-28W

Very few birds west of the islands - total 139. Only 41 Sooty Terns - no feeding flocks. 49 Bulwers Petrels - 3 collected - all new flight feathers, new body feathers with a light body molt. Most appeared to be migrating with general direction from NE to SE. All night observations held - total 8 birds.

2 March - 1-49 N; 176-20W - 0-29 W; 177-31 W

numbers picked up some today - mainly Sooty Terns in feeding flocks - total 191?, 132 St. All night observations = 12.

3 March 0-16 S; 177-26W - 012; 176-11W

Ran an oil slick in the afternoon but few birds came. Storm Petrels fairly numerous throughout day - 29 total, 3 Leach's collected - all night observations = 26 birds. Diurnal ? = 120

4 March - 0-13 N; 176-23W - - 1-07 S; 176 - 29 W

Mostly storm Petrels today = 35, 2 Leach's coll. only 83 birds total. All night observations accounted for 40.

5 March - 1-03 S; 176-27W --- 0-00; 175-12W

Last day in ? #5. Very few birds. Total of 34, 15 of these WRSP, 2 Leach's collected. Only 7 Sooty Terns sighted. Left ? at SS.

6 March - 1-03 S; 173-44 W - - - 2-11 S; 173 - 27 W

Mostly single sightings - predominantly storm petrels until late afternoon when flocks began showing up. These composed of ST, CNT, FT and a few Aud. Shear and Xmas I. Shear., WT. There are most likely Phoenix Island birds. reached Canton Island about midnight.

SG started typing from here on.

March 6 - 1-03S; 173-44W - 2-11S; 172-27W

Xmas I

Mostly single sightings, predominantly Storm Petrels until late afternoon when flocks began showing up. These composed of ST, CNT, FT and a few Aud-Shear and Xmas I. Shear, WT. These are most likely Phoenix Island birds. Reached Canton Island about midnight.

March 7 - 2-33S; 171-12W - 2-01S; 169-31W

Bird numbers down as we move away from islands into open water. Total 120. One White-rumped Storm Petrel with odd white belly - not a White-throated Storm Petrel - and one small dark storm pet w/o white rump.

March 8 - 1-25S; 167-49W - 0-56S; 166-13W

Total 64 birds, mostly Sooty Terns in one flock (42). One Sooty collected banded Enderbury 65. Probably this is the NW limits of Phoenix Island Group birds ranging out. Mostly quiet all afternoon.

March 9 - 0-19S; 164-32W - 0-19N; 162-53W

Slow day as would be expected this far from any islands. 89 birds - mostly Sooty Terns (36) and Storm Petrels (White-rumped - 29) 2 of which were Leachs' collected.

March 10 - 1-00N; 161-07W - 1-25N; 159-33W

Total number of birds not unusually high, 181, considering the nearness of land, but considerable variety of species exhibited. Two most common forms were Sooty Terns, 119, and White-rumped Storm Petrels (32). One of these latter was a Harcourts Storm Petrel. The majority are unquestionably Leachs - 3 collected.

Due to arrive at Christmas at day break.

March 11 - Christmas Island

Arrived on island about 0930. Mr. Wardell was off on the other side of the island, so we spent an hour in waiting. After his return and lining up the old dilapidated Land Rover we headed out on survey. One colony of Sooty Terns is established on seaward side of main road about 5 miles from _____ on N. side. Another scattered colony is spread along the long axis of the island by carver way, but this did not seem dense enough to work.

Spent the entire night at the PUR colony 5 miles from _____ with Harrington, Lewis, Smith and Heryford. Banded 7,400 Sootys and took ca. 110 samples of blood. Chicks were mostly between half grown and nearly ready to fly. Max and Dayle spent day on Moto Upua. Phoenix Island Petrels with everything from fresh eggs to grown chicks.

March 12 - Went out to Sooty Tern colony on south end of island by deserted, long air strip. This extended for about 5 miles - long axis of island - and was in dense grass and Sida. Chicks ranged from week old to nearly full grown. Entire party went here - banded 7600 between chicks and adults.

March 13 - Christmas Island

Entire party went out in rubber raft to Motu Tabu. Banded ca. 700 Christmas Island Shearwaters, Phoenix Island Petrels and wedge-tails in combination. Wedgetails were primarily digging new burrows. The Phoenix Island Petrels had fresh eggs up to full grown chicks and nested mainly under clumps of vines and dense bushes and under sheltered Messerschmidia trees, as did Christmas Island Shearwaters which ranged through same stage of nesting. A few Red-tailed Tropicbirds with eggs and/or chicks were noted. Fairy Terns abundant - eggs to young, mainly in the Messerschmidia trees. Hawaiian Noddy Terns - eggs through chicks, nests built mainly in Messerschmidia trees of leaves of same tree. Common Noddy Terns - eggs through chicks, no nests built - the eggs laid on bare spots on the ground, usually under dense Messerschmidia.

Banded Sooty Tern chicks and adults in the colony on south end of island during the night. Intermittent rain squalls seriously hampered work.

March 14 - Party went out to Cook Island about mid day. The Sooty Tern colony was just finishing a nesting cycle. About 500 adults were sitting on the ground, but only about 10 full grown flying chicks were present. A few Crested Tern chicks were scattered about - 1/2 - 3/4 grown. A few Blue-gray Noddies appeared to be nesting. Fairy Terns were especially abundant in all the gringing Messerschmidia trees. Common Noddy and Hawaiian Noddy Terns present in low numbers and nesting.

Banded Sooty Tern chicks and adults on the N end of the island (before PMR) from 10-30N. Roughly 7000 banded in combination. Chicks ranged from half to tull grown. Colony of ca. 150-200,000 birds. Cats are very abundant here as elsewhere in the vicinity of cononies and are taking a great toll of chicks. Finished banding after 0300 and broke camp and returned to Shearwater.

March 15 - 2-30N; 157-36W - 4-35N; 157-32W

First day N Christmas - numerous birds - 1210 total. Dark wedgetails very common - 345 total. Most WT going N or NW throughout A.M. Many returning S. during P.M. Very large feeding flock at dusk (1750). Phoenix Island Petrels common throughout day - 25. Sooty Terns very abundant - 720. Most birds string out traveling, except when in large flocks (feeding). Red-footed Boobies common in flocks up to dark. Probably the vast majority of the days total were birds based on Xmas Is. or others in the Line group.

March 16 - 6-34N; 157-30W - 8-36N; 157-31W

Considerable number of birds observed, but practically all confined to 3 flocks. Total of 459 birds, 418 in 3 flocks. Flocks composed of Sooty Terns and Wedgetails. One flock with 200 wedgetails were 90 percent light birds, so apparently represent northern populations. A few Juan Fernandez and Phoenix Island/tabit Petrels about, Storm Petrels have dropped off drastically since Xmas Island. Seas continue very rough and hinder collecting as spray shoots over the bow and it becomes impossible to stand watches from there.

March 17 - 10-39N; 157-33W - 12-36N; 157-39W

Seas quite rough, wind strong - very few birds. A total of 41, mostly Sooty Terns in 2 flocks (33). Only 9 sightings over entire day.

R.S. Crossin
1966

Journal SIC 11

14 March

X-mas

Party went out to Cook Island about mid-day. The Sooty tern colony was just finishing a nesting cycle. About 500 adults were sitting on the ground, but only about 10 full grown, flying chicks were present. A few Crested Tern. Chicks were scattered about - 1/2 - 3/4 grown. A few Blue-grey Noddies appeared to be nesting. Fairy Terns were especially abundant in all the fringing Messerschmidia trees.

Common Noddy and Hawaiian Noddy Terns present in low numbers and nesting.

Banded Sooty Tern chicks and adults on the N end of the island (before PUR) from London. Roughly 7,000 banded in combination chicks here ranged from half-to full grown - Colony of ca. 150-200,000 birds. Cats are very abundant here as elsewhere in the vicinity of _____ ? and are taking a great toll of chicks. Finished banding after 0300 and broke camp and returned to Shearwater.

15 March - 2-30 N; 157-36 W - 4-35 N; 157-32W

First day N. X-mas, numerous birds - 1210 total. dark Wedgetails very common - 345 total. Most WT going N or NW throughout A.M., many returning S. during P.M. Very large feeding flock at dusk (1750) Phoenix Island Petrels common throughout day 25. Sooty terns very abundant - 720. Most birds strung out traveling, except when in large flocks (feeding). Red-footed Boobies common in flocks up to dark. Probably the vast majority of the days' total were birds based on Xmas Id. - or others in the Line group.

16 March - 6-34 N; 157 - 30 W - - - 8-36 N; 157 - 31 W

Considerable number of birds observed, but practically all confined to 3 flocks. Total of 459 birds, 418 in 3 flocks. Flocks composed of Sooty terns and Wedgetails. One flock with 200 Wedgetails were 90% light birds, so apparently represent northern populations. A few Juan Fernandez and Phoenix Is./tahitian Petrels about, Storm Petrels have dropped off drastically since Xmas Island. Seas continue very rough and hinder collecting as spray shoots over the bow and it becomes impossible to stand watches from there.

17 March - 10-39 N; 157-33 W --- 12-36 N; 157 - 39 W

Seas quite rough, wind strong. Very few birds. A total of 41, mostly Sooty Terns in 2 flocks (33). Only 9 sightings over entire day.

18 March - 14 - 40 N; 157-49 W - - 16-52 N; 157-47 W

Seas again very rough. Could not collect, supposedly because starboard engine controls were ready to break, but without doubt reason in activity was crew and Capt - alike - have channel fever. 10 Phalaropes?/ Sanderlings. sighted but of course could not collect any. Appear to be Red Phalaropes, but uncertain until one is collected. 30 Sooty terns for a total of 44 birds.

19 March - 19-00N; 157-42 W - 20-58 N; 158-57 W

Day similar to yesterday. Total of 45 birds few more petrels, 1 Sooty/slender bill; and possibly 1 mottled Petrel. 2 Phalarope sp. again today. Arrive Honolulu about 8-830 tonight. 2 Black-footed Albatrosses started following ship today.

R.S. Crossin
1966

7 March - 2-33 S; 171-12 W - - 2-01 S; 169 - 31 W

Bird numbers down as we move away from Islands into open water. Total 120. One White-rumped Storm petrel with odd white belly - not a White-throated Storm Petrel. and one small dark storm pet w/o white rump.

8 March - 1-25 S; 167-49 W - - 0 - 56 S; 166 - 13 W

Total 64 birds, mostly Sooty tern in one flock (42). One Sooty collected - banded Enderbury 65. Probably this is the NW limits of Phoenix Island Group birds ranging way out. Mostly quiet all afternoon.

9 March - 0-19 S; 164-32 W - - 0 - 19 N; 162-53W

Slow day as would be expected this far from any islands. 89 birds - mostly Sooty tern (36) and Storm Petrels (White-rumped - 29) 2 of which were Leach's collected.

10 March - 1 - 00 N; 161 - 07 W - - 1 - 25 N; 159 - 33 W

Total number of birds not unusually high, 181, considering the numbers of band, but considerable variety of species exhibited. Two most common forms were Sooty terns, 119, and White-rumped Storm petrels (32). One of these latter was a Harcourt's Storm Petrel. The majority are unquestionably Leach's - 3 collected. Due to arrive at Christmas at daybreak.

11 March - Christmas Island

Arrived on Island about 0930. Mr. Wardell was off on the ? side of the island, so we spent an hour in waiting. After his return and lining up the old dilapidated Land Rover we headed out on survey. One colony of Sooty terns is established on seaward side of main road about 5 mi from London on N side. Another scattered colony is spread along the long axis of the island by Carver way, but this did not seem dense enough to work.

Spent the entire night at the PUR colony 5 mi from London with Harrington, Lewis, Smith and Heryford. Banded 7,400 Sootys, and took ca. 110 samples of blood. Chicks were mostly between half-grown and nearly ready to fly. Max and Dayle spent day on. Moto Opuu. Phoenix Island Petrels with everything from fresh eggs to grown chicks.

12 March - X-mas

Went out to Sooty tern colony on South end of island by deserted, long air strip. This extended for about 5 miles - long axis of island - and was in dense grass and Sida. Chicks ranged from week old to nearly full-grown. Entire party went here - banded 7,600 between chicks and adults.

13 March - Christmas Island

Entire party went out in rubber raft to Moto Tabu. Banded ca. 700 Christmas Island Shearwaters. Phoenix Island Petrels and Wedgetails in combination. Wedgetails were primarily digging new burrows. The Phoenix Island Petrels had fresh eggs up to full grown chicks and nested mainly under clumps of vines and dense bushes and under sheltered Messerschmidia trees, as did Christmas Island Shearwaters which ranged through same stages of nesting. A few Red-tailed Tropicbirds with eggs and/or chicks were noted. Fairy terns abundant - eggs to young, mainly in the Messerschmidia trees. Hawaiian Noddy Terns - eggs through chicks, nests built mainly in Messerschmidia trees of leaves of same tree. Common Noddy Terns - eggs ? chicks, no nests built - the eggs laid on bare nets on the ground, usually under dense Messerschmidia.

Banded Sooty Tern chicks and adults in the colony on south end of island, during the night. Intermittent rain squalls seriously hampered work.

R.S. Crossin
1966

SIC 11

March 18 - 14-40N; 157-49W - 16-52N; 157-47W

Seas again very rough. Could not collect, supposedly because starboard engine controls were ready to break, but without doubt reason in actuality was crew and Capt. alike have channel fever. 10 Phalaropes ?/ Sanderlings sighted but of course could not collect any. Appear to be Red Phalaropes, but uncertain until one is collected. Thirty Sooty Terns for a total of 44 birds.

March 19 - 19-00N; 157-42W - 20-58N; 158-57W

Day similar to yesterday. Total of 45 birds few more petrels, 1 Sooty/ Slenderbill, and possibly 1 Mottled Petrel, 2 Phalaropes sp. again today. Arrive Honolulu about 8-8:30 tonight. Two Black-footed Albatrosses started following ship today.

R.S. Crossin
1966

= 190, 20 Fairy Terns. Total birds - 225. Only 3 Sooty Terns noted, none yesterday. A few dark Wedgetails - shear-pet almost non existant.

February 25 - 8-15S; 172-23W - 6-17S; 173-18W

Only 90 birds today - 71 of them Sooty Terns. More variety showing up finally - few Petrels, few White-rumped Storm Petrels and pair of Jaegers. Only 2 flocks, both traveling, and both composed of purely Sooty Terns.

February 26 - 4-25S; 174-17W - 2-37S; 175-23W

Numbers increased considerably today - 211 total, 100+ terns, many White-rumped Storm Petrels, and a few White-throated. Some of the white-throated were intermediate phase with just patches of white along flanks and a few were completely dark phase. Ran nocturnal from midnight to sunrise, only 2 birds.

February 27 - Southern Grid - Baker to Howland - 0-52S; 176-21W to How.

Birds very numerous about the islands. Total of 698 - 580 of them Sooty Terns. Numerous small to medium sized feeding and traveling flocks. Ca. 5,000 Sooty Terns swirling over Howland, but none on the ground as yet. About 15-20 were noted on the beach as we landed. 44 terns seen on all night observations.

February 28 - NE Howland - 1-15N; 175-26W - 0-14N; 176-30W

Numbers dropped off considerably away from the islands, - 165 total - 100 terns, 42 Storm Petrels, 11 Leachs collected, so must assume that the vast majority of White-rumped Storm Petrels are Leachs'. Few terns upon reaching the islands and very few on Noc - or from Baker to Howland.

March 1 - Howland Island - 1-20N; 177-28W

Very few birds west of the islands. Total 139. Only 41 Sooty Terns - no feeding flocks, 49 Bulwers Petrels - 3 collected - all new flight feathers, new body feathers with a light body molt. Most appeared to be migrating with general direction from NE to SE. All night observations held - total 8 birds.

March 2 - 1-49N; 176-20W - 0-29N; 177-31 W

Numbers picked up some today - mainly Sooty Terns in feeding flocks - total 191, 132 ST. All night observations = 12.

March 3 - 0-16S; 177-26W - 012; 176-11W

Ran an oil slick in the afternoon but few birds came. Storm Petrels fairly numerous throughout day - 29 total, 3 Leachs' collected. All night observations = 26 birds. Diurnal total = 120.

March 4 - 0-13N; 176-23W - 1-07S; 176-29W

Mostly Storm Petrels today = 35, 2 Leach's collected. Only 83 birds total. All night observations accounted for 40.

March 5 - 1-03S; 176-27W - 0-00; 175-12W

Last day in SG # 5 - very few birds - total of 34, 15 of these WRSP, 2 Leachs collected. Only 7 Sooty Terns sighted. Left Grid at SS.